No 566

2

OBSERVATIONS, ANATOMICAL, PHYSIOLOGICAL, and PATHOLOGICAL, ON THE PULMONARY SYSTEM:

WITH
REMARKS ON SOME OF THE DISEASES OF THE LUNGS, VIZ.
ON
HÆMORRHAGE, WOUNDS, ASTHMA, CATARRH, CROUP,
AND
CONSUMPTION;
TENDING
TO ESTABLISH A NEW PATHOLOGY OF THE LUNGS,
FOUNDED ON THE
ANATOMY AND PHYSIOLOGY OF THE PARTS.
SOME REMARKS
Are introduced on the BROKEN-WIND of HORSES.
AND TO THE WHOLE IS ADDED AN
APPENDIX,
CONTAINING
OBSERVATIONS ON SOME OF THE ARTICLES OF THE
MATERIA MEDICA, viz.
ON THE
ROSA RUBRA, FLORES CHAMÆMELI AND SARSAPARILLA;
AS ALSO ON THE
CICUTA, STRAMONIUM, HYOSCIAMUS AND ACONITUM.

* * *

Deo, Optimo, Maximo, duce, in regiones pathologicas tendimus, Anatomiâ et Phyſiologiâ monſtrantibus iter. Paſſibus autem æquis Chymia ſequatur, ut, illis deficientibus, hæc quoque magnas ſuas opes ſuppeditet.

——— Si quid noviſti rectius iſtis
Candidus imperti; ſi non, his utere mecum.
HOR.

* * *

BY WILLIAM DAVIDSON.

London:
PRINTED BY S. LOW, BERWICK STREET;
FOR T. EGERTON, CHARING CROSS; J. JOHNSON, ST. PAUL'S CHURCH YARD; AND W. RICHARDSON, ROYAL EXCHANGE.
1795.

TO

PATRICK BARTLET, ESQ.
&c. &c.

THE

FOLLOWING SHEETS

ARE RESPECTFULLY INSCRIBED,

AS A

SMALL TESTIMONY OF ESTEEM AND REGARD,

BY

HIS MUCH OBLIGED,

AND MOST OBEDIENT

HUMBLE SERVANT,

WILLIAM DAVIDSON.

QUEEN ANNE-STREET, EAST,
1795.

ERRATUM.

Page 66, line 18, for ‘ I,’ read ‘ we.’

The Author is ſorry that in ſome other paſſages a ſimilar inadvertence will be perceived, which, he hopes, the reader will excuſe.

CONTENTS.

Page

INTRODUCTION, — — vii

CHAP. I.

General Anatomy and Phyſiology of the Lungs, with ſome preliminary Obſervations, 1

CHAP. II.

General Obſervations, and practical Remarks, on Active Hæmorrhage from the Lungs: together with ſome Remarks on Wounds penetrating their Subſtance, — 12

Several Caſes of Pulmonary Hæmorrhage, ſpeedily and ſucceſsfully cured by a limited Uſe of Liquids, — — 29

CHAP. III.

Obſervations, and practical Remarks on the Aſthma, — — 49

A few Thoughts on the Broken-wind in Horſes and other Animals, as being a diſeaſe analogous to the Aſthma of the Human Subject, 77

Page

CHAP. IV.

General Remarks on Pulmonary Conſumption, with ſome Obſervations on Catarrh, and Croup; as alſo on the Seat, Origin, Formation, and Termination of Tubercle, 84

On Inflammation, Suppuration, and Ulceration of Tubercle, — — 124

Prevention and Cure of Tubercle, — 128

CHAP. V.

Remarks on the Treatment of Ulceration of the Lungs, and Pulmonary Conſumption, 139

Two Caſes of Conſumption, the one greatly relieved, and the other cured, by the limited Uſe of Liquids, — — 171

APPENDIX.

Obſervations on ſome of the Articles of the Materia Medica, — 183

CHAP. I.

On the Roſa Rubra, Flores Chamæmeli and Sarſaparilla, — — ibid.

CHAP. II.

On the Cicuta, Stramonium, Hyoſciamus and Aconitum; with ſome Remarks on Sedatives in general, — — 190

INDEX, — — 221

INTRO-

INTRODUCTION.

As diſeaſes of the Lungs are, by far, the moſt common in this country, and the treatment of them involved in much obſcurity and difficulty, any rational attempt to throw light upon the ſubject will, I doubt not, be examined with that candour and attention which the magnitude of the object and the nature of the undertaking require.

And, when I inform the reader of the extent and importance of the ſubject I am about to conſider, that it comprehends, and influences the treatment of, the whole of the

the diſeaſes of ſome vital organs, and tends to point out a principle in the cure of them hitherto unnoticed; he will, I truſt, be induced to peruſe theſe obſervations with patience, and to forgive ſome errors which he will undoubtedly meet with. Therefore, in treating a buſineſs of ſo great moment, and attended with ſo much difficulty, inſtead of incurring the ſeverity of criticiſm for preſumptive boldneſs, I hope, I ſhall receive the approbation of the Public for having had ſufficient courage to attempt ſo arduous an undertaking. For notwithſtanding the taſk is arduous indeed, and although in this field of Pathology I have to contend with a moſt powerful enemy, I ſhall, nevertheleſs, attempt his overthrow. And, animated by the exclamation of Baglivi,

"O quantum difficile eſt curare morbos pulmonum!"

I boldly proceed; and, under the auſpices of Heaven, doubt not of ſome ſucceſs.

The buſineſs of the following remarks, therefore, is to point out a *principle* hitherto neglected, but of the utmoſt importance, in the treatment of every morbid affection of the Lungs; and from which ariſes a new pathology of all the pulmonary diſeaſes, founded on the beſt of all poſſible baſes, the anatomy and phyſiology of the parts. This principle, which, I conceive the reader will find eſtabliſhed in the following remarks, is that of a particular and and ſtrict *limitation of liquids* during the treatment of every pulmonary diſeaſe; a principle ſimple and obvious, involved in no obſcurity, and eaſily applied.

It appears wonderful that practitioners have never thought of this principle, but have, on the contrary, conſtantly treated patients, labouring under pulmonary affections, in the ſame way as if they had laboured under ſimilar diſeaſes of any of the other parts of the body. But it ſeems probable that this proceeded from their not attending to their peculiar ſtructure, which is different from every other part of the body; for in all the other viſcera, and in almoſt every other ſoft part of the body, there is ſome fleſhy ſubſtance in their compoſition beſides their veſſels; but, in the lungs, there is no parenchymatous or fleſhy ſubſtance, they being entirely compoſed of veſſels of different kinds, of which the blood veſſels form a very principal part. Reſpecting the common treatment of pulmonary diſeaſes, every practitioner knows, that the patient is ordered to drink plentifully of diluting drinks; which appear grateful to the patient, becauſe the dry and irritable fauces receive a temporary relief from the paſſage of theſe ſoft liquids. But whoever conſiders the ſtructure of the lungs, and remembers that they are entirely compoſed of veſſels, and that their natural functions cannot be eaſily performed, even in health, if much additional liquid is taken into their blood veſſels, will immediately ſee the impropriety of the practice, and be no more aſtoniſhed at our want of ſucceſs in the treatment of their various diſeaſes.

To endeavour, therefore, to remove this error, and to eſtabliſh the almoſt ſelf-evident principle above-mentioned, conſtitutes the chief intention, as has been already obſerved, of publiſhing theſe remarks.

This principle of treating diſeaſes of the lungs firſt occurred to me while attending a patient a patient affected with hæmorrhage from them; but, ſince then, I have found a proper limitation of liquids of much benefit in all the other pulmonary diſeaſes. Therefore, inſtead of ordering my patients to drink many quarts of diluents in the twenty-four hours, as is the common practice, I have only allowed them half a pint, a pint, or a pint and a half, of liquid, including tea and every other kind of fluid taken by the patient, during that period.

And my practice has been crowned with the moſt flattering ſucceſs.

And caſe ſecond of pulmonary hæmorrhage exhibits an example of actual conſumption, and where the hæmorrhage was moſt probably a conſequence of ulceration of the lungs, where not only the hæmorrhage, but alſo all the other pneumonic affections were removed by that method of treatment.

In the cure of aſthma I have alſo found a proper attention to this principle of great importance.

And in the following obſervations, I hope I have ſatisfactorily proved that the proximate cauſe of this morbid affection, when an original diſeaſe, does not always conſiſt in conſtricted air veſſels, as has been hitherto ſuppoſed, but more generally in over-diſtended blood veſſels, occaſioning difficulty of breathing from compreſſion, and not from conſtriction, of the bronchia.

To the remarks on aſthma ſome obſervations are added on the broken-wind of Horſes, which diſeaſe in them I conceive to be the ſame as the aſthma of the human ſubject.

After theſe remarks on aſthma, &c. a few obſervations are offered on that moſt horrible of the pulmonary diſeaſes, the Pulmonary Conſumption.

In the treatment of conſumptive patients, I have obſerved many advantages to ariſe from the moderate uſe of liquids; for even thoſe, who were in the laſt ſtage of the diſeaſe, found their breathing become thereby eaſier, and their hectic ſymptoms alſo much diminiſhed.

In pointing out the application of the above principle in the cure of the different pulmonary diſeaſes I have rather choſen, for the preſent, to deliver the doctrine as it naturally ariſes from practice and obſervation, than to confine myſelf by any ſyſtematic arrangement. But when a proper opportunity ſhall be allowed me I will, with pleaſure, reſume the ſubject, and arrange it in a more regular form; adding, at the ſame time, whatever new obſervations may occur from future practice.

To my obſervations and remarks on pulmonary diſeaſes I have added a few obſervations on ſome of the articles of the materia medica, from a ſtrong conviction, that, if properly conſidered, they will in ſome degree contribute to alleviate the miſeries of mankind.

To conclude: I have only to add, that I rely, with confidence, upon that Public, in whoſe ſervice I am moſt aſſiduouſly engaged, for excuſing many errors which muſt unavoidably occur under the circumſtances in which I am placed.

OBSERVATIONS,

OBSERVATIONS,

&c. &c.

CHAP. I.

General Anatomy and Phyſiology of the Lungs, with ſome preliminary Obſervations.

AS a particular deſcription of the anatomy and phyſiology of the lungs would far exceed the limits of this publication, a very conciſe and general view only will be given; it being ſolely intended to call to the reader's mind ſome general circumſtances which are more immediately connected with the preſent ſubject. The reader will be pleaſed to recollect that the lungs, which are the organs of reſpiration, are ſituated in the lateral parts of the thorax, and conſtitute the chief bulk of its contents; that they nearly ſurround the heart, with which and their appendages, they form one large maſs adapted in figure to, what is commonly called, the cavity of the thorax: that they conſiſt of a congeries of blood veſſels, abſorbing veſſels, nerves, and air veſſels, joined looſely together by the cellular membrane, the common connecting medium of the body; and that the whole is enveloped by the pleura, a fine ſmooth membrane, which, being continued from the lungs over the internal ſurface of the ribs, intercoſtal muſcles, and diaphragm, forms the internal lining of the cheſt. There is no fleſhy ſubſtance in their compoſition beſides theſe veſſels; ſo that they may be juſtly conſidered as two bundles of veſſels, right and left, forming the great pulmonary ſyſtem; of which the blood veſſels make a very principal part. Theſe blood veſſels, which, in ſtructure, reſemble thoſe of the other parts of the body, are the pulmonary artery, ariſing from the right ſide of the heart, and branching through the lungs; and the pulmonary veins, ariſing from the extremities of the arteries and paſſing on to terminate in the left ſide of the heart. And by theſe pulmonary arteries and veins the blood is expoſed to the influence of the air, and tranſmitted from the right to the left ſide of the heart. But, beſides theſe great veſſels of expoſition and tranſmiſſion, the lungs have another ſet of blood veſſels, in common with every other part of the body, for their nouriſhment and ſupport; we mean the bronchial arteries with their correſponding veins, whoſe minute ramifications conſtitute the *vaſa vaſorum* of all the other pulmonary veſſels: Whether the laſt-mentioned veſſels be the chief ſource of the internal ſecretion is not yet clearly determined. Now it will appear evident, that the pulmonary blood veſſels, as poſſeſſing the ſame muſcular ſtructure as the other blood veſſels of the body, are liable to the ſame diſeaſes. The ſame increaſed tone and activity may certainly exiſt in them, as in the general ſyſtem; as well as the ſame debility, and the ſame diſpoſition to over-diſtention, from which that contractile power, neceſſary for a proper circulation, may be either diminiſhed or deſtroyed. Nor is it improbable to ſuppoſe, that aneuriſm and varix may exiſt in the blood veſſels of the lungs, as well as in thoſe of the other parts of the body.

The ſyſtem of air veſſels conſiſts of the larynx, the trachea arteria, and its branches (the bronchia), which terminate in a particular cellular termination, called the air cells.

Here I beg leave to call the recollection of the reader to the muſcular and cartilaginous ſtructure, as well as to the irritable internal membrane, of this ſyſtem.—He will recollect that this internal lining is a continuation of that mucous membrane which covers the ſauces; and that, like it, it is alſo furniſhed with glands which ſecrete a ſlimy fluid, or mucus, for keeping it moiſt and defending it from the irritation of noxious vapours, or a too ſharp atmoſphere. For the variety of ſituation and circumſtances, under which man might be accidentally placed, rendered it neceſſary that his conſtitution ſhould thus adapt itſelf to them in the article of air, as well as in that of heat and cold. But beſides this ſecretion of mucus for defence, there is alſo a conſiderable ſecretion or exhalation of watery vapour on every expiration.

The air cells, or the ultimate terminations of the bronchia, have been ſuppoſed by ſome anatomiſts to communicate with the common cellular membrane of the lungs: but they certainly do not, although in ſtructure they bear a reſemblance, inaſmuch as the air cells communicate with one another, in the ſame way as the cells of the cellular membrane.

If that ſuppoſed communication exiſted, dropſy of the lungs, or a collection of water in their common cellular membrane, could not exiſt; but which I have ſeveral times ſeen, even when the lungs have been apparently found in every other reſpect.

And in the ſecond volume of Medical Communications, p. 471, a caſe is related by the learned, the ingenious, and accurate Dr. James Carmichael Smyth, of effuſion of blood and ſerum into the cellular connecting membrane of the lungs, which deſtroyed the patient; yet not a drop of it was expectorated, as it was poured out into the connecting cellular ſubſtance, and not into the air cells.—Dr. Smyth likewiſe mentions his having ſeen a caſe of the ſame kind after peripneumony; and that he had alſo ſeen one inſtance of pure emphyſema of the lungs. Monſieur Vitet, of Lyons, in his diſſections of the larger animals, as the horſe, the ox, &c. could find no communication between the air cells and the connecting cellular membrane. His words are, " L'exiſtence des veſicules eſt donc auſſi imaginaire que *le paſſage de l'air dans le tiſſu cellulaire*, & que ſa ſortie à travers les membranes qui convrent la ſurface externe des poumons.*" Whenever, therefore, this communication has appeared, we may venture to ſay that it was occaſioned either by diſeaſe, from rupture of the air cells, or from ſome perforation of them, or extrication of air after death. The reader will obſerve we are only ſpeaking of the human ſubject and quadrupeds; as we know that, in birds, the air pervades almoſt every part of the body, which anſwers a good purpoſe in their œconomy. But, even in them, it has been demonſtrated that the aërial ſyſtem is a ſyſtem by itſelf, having no communication with the common cellular membrane †. The reader already knows that abſorbing veſſels and nerves are ſent to the lungs, in common with every other part of the body.

To all the different branches of the ſyſtem juſt mentioned, different offices are aſſigned; which, when regularly and eaſily performed, conſtitute its general health, and *e contra.* To the abſorbent veſſels is aſſigned the office of counteracting the natural exhalation into the different interſtices, of abſorbing extravaſation, and, perhaps, tubercle and induration; and if they fail to do their duty, diſeaſe and conſequent oppreſſion will ſucceed. By its nerves is conveyed that influence, whatever it may be, which is neceſſary for producing the different actions of the whole. By means of the air veſſels the air is conſtantly paſſing to and from the lungs, which, either by conveying ſomething vivifying to, or carrying off ſomething noxious from, the conſtitution (perhaps both) becomes ſo neceſſary for health, that we can live but a very ſhort time without it; and, in order that this particular function may be properly performed, it is neceſſary that the lungs muſt be in perpetual motion. By the large and numerous pulmonary arteries and veins, the whole blood of the body is expoſed in the lungs, and conveyed from the right to the left ſide of the heart, as I ſhall now briefly relate. The blood, collecting together from all the different parts of the body, comes into the right ſide of the heart, from whence it is circulated by the pulmonary artery and its different ramifications through the lungs; and the minute branches of this artery terminating in thoſe of the pulmonary veins, the blood is thereby conveyed to the left ſide of the heart; from whence it is thrown into the aorta, or great artery, which carries it all over the body, for the various purpoſes of the animal œconomy. From this account of the circulation through the lungs, it will clearly appear that it muſt keep pace with the motion of the heart: ſo that, if the blood returns in great quantity to the heart, it will be rouſed to ſtronger action, and will throw the blood with force and celerity, and in increaſed quantity into the veſſels of the lungs; but if the blood returns in moderate or diminiſhed quantity to the heart, it will be propelled with ſlowneſs and regularity into the lungs, and its circulation through them will be gentle and uniform. In the former caſe the veſſels will be diſtended beyond their healthy ſtate, and rupture of any weak parts be likely to follow; and, when ruptured, may continue to pour out their contents, and an union of the orifices be thereby prevented: thus hæmoptoe, which becomes a very frequent cauſe of conſumption, is produced; and it would appear probable that the diſtention of the veſſels proves one of the chief obſtacles to the cure. In the latter there will be no impediment to any of the natural pulmonary functions: ſo that, if in a ſtate of diſeaſe, breathing will become leſs frequent and eaſier, ruptured veſſels will unite, incipient tubercles may diſappear, extravaſations be abſorbed, and ulcerations have a greater chance of a cure.

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* Vide Médecine Vétérinaire par M. Vitet, Docteur & Profeſſeur en Medecine, à Lyon.

† Vide Philoſophical Tranſactions, 1774.

To conclude, I truſt it will appear evident, from what hath been ſaid, that when the abſorbents of the lungs do their duty, when the air paſſes and repaſſes with eaſe, when the blood flows uniformly and eaſily through them, and when the nervous influence is properly conveyed, that then they are in health.

After this general view of their ſtructure and healthful functions, we ſhall next beg leave to offer a few other general obſervations before we enter upon the treatment of their various diſeaſes. It will doubtleſs be allowed that, in the different diſeaſed ſtates of the ſeveral parts of the body, a cure can only be brought about by the proper exerciſe of the powers naturally inherent in thoſe parts, and that the buſineſs of the phyſician and ſurgeon is either to excite or reſtrain thoſe actions, ſo that their exertions towards recovery may be preciſely adapted to the ſtate of the parts, or nature of the diſeaſe, under which they labour: and that, for this purpoſe, it is, in general, neceſſary that the part affected ſhould be at reſt, that thoſe natural efforts may be allowed to proceed, without interruption, in the buſineſs of reſtoration. On this principle, the ſurgeon having properly placed the ends of a fractured bone, and put the limb in the moſt eaſy natural poſition, leaves the reſt to nature; and no plaiſter, no bandage, can unite theſe bones, if the natural functions of the part, from inability or want of excitement, are not exerted on the occaſion; for by them, and them alone, can the health of the part be reſtored, or a callus formed. Theſe exertions the ſurgeon will either excite or reſtrain, according as they are either too remiſs or too active in the performance of their reſpective functions. In the former caſe he will give the bark, wine, and other ſtimuli; and in the latter he will uſe bleeding, purging, and the other means of leſſening action commonly employed. In the different morbid affections of the lungs, the phyſician will endeavour to adopt the ſame plan which the ſurgeon uſeth in the treatment of a broken limb, viz. he will endeavour to keep them as quiet, and as much at their eaſe, as poſſible, and ſo regulate their natural powers as to give the beſt chance of a cure: but here he labours under many diſadvantages, as the natural offices of the parts require them to be in perpetual motion ; and, in caſes of inflammation, rupture of the veſſels, induration or other diſeaſe of any part of them, the variety of local applications, made uſe of to external parts, cannot be adopted. No fomentation, no poultice, no ſtyptic, can be applied. Inhalation is the only mean we have of local treatment, but which, when properly regulated, may be of conſiderable ſervice.

However, as no application can form the callus of a bone, ſo no particular medicine, we know, whether locally applied or internally adminiſtered, can, to a certainty, remove a tubercle, or heal an ulcer of the lungs.

The moſt rational plan, therefore, and which will, moſt probably, give the greateſt chance of recovery, ſeems to be to retain them, as much as poſſible, at eaſe, that their natural powers may be allowed to exert themſelves, and be ſo regulated as to accompliſh a cure.

CHAP. II.

General Obſervations, and practical Remarks, on Active Hæmorrhage from the Lungs: together with ſome Remarks on Wounds penetrating their Subſtance.

AS the whole of the doctrine to be delivered in theſe obſervations, is more particularly applicable to, and originated in, the treatment of bleeding from the lungs, and, as this diſeaſe proves a very common cauſe of pulmonary conſumption, it may be moſt natural to notice it firſt.

Active hæmorrhage from the lungs may ariſe from a variety of cauſes; and may be naturally divided into two different ſtates, viz.

1ſt, When the hæmorrhage alone conſtitutes the diſeaſe;

2d, When accompanied with more or leſs of other morbid affection.

This diſtinction, although worthy of conſideration in forming a prognoſis of the diſeaſe, is of little uſe in the application of the principle we contend for, or in the adminiſtration of the other remedies commonly made us of.

The more common cauſes of the firſt ſtate of hæmoptyſis are, coughing, ſtraining, or any violent exertion, by which conſiderable determination of the blood is made to the lungs, from which proceeds rupture and conſequent hæmorrhage. In this caſe it is more apt to happen in a plethoric ſtate of the ſyſtem, and moſt frequently to perſons of narrow cheſts, whoſe lungs are therefore compreſſed, and their veſſels confined. Sudden rarefaction of the blood, while the veſſels have been conſtricted from cold, is another very common cauſe of this diſeaſe.

But from whatever cauſe it ariſes, if the rupture is conſiderable, and a cure is not ſpeedily accompliſhed by a proper union of the ruptured veſſel, great bleeding will, moſt probably, enſue, and ulceration and conſumption very generally follow. Whereas, if proper attention is paid to the principles here pointed out, the treatment becomes eaſy and effectual; and ſcarcely one patient in a hundred will become conſumptive from this cauſe, providing his conſtitution is otherwiſe ſound. What proportion of patients

tients become conſumptive from ulceration of the lungs, the moſt common conſequence of hæmorrhage from them, I do not exactly know; but when we find the learned and ingenious Dr. Beddoes, and other reſpectable authors, writing many pages, and in them mentioning it as the chief cauſe, we may readily conclude it is conſiderable.

Since the idea of moderate drinking, in diſeaſes of the lungs, occurred to me, I have had many patients under my care in this firſt ſtate of the diſeaſe, and have ſucceeded far beyond my moſt ſanguine expectations by that mode of treatment.

The ſecond ſtate of pulmonary hæmorrhage is when it is attended with other diſeaſe, as tubercle, abſceſs, or induration. In the firſt ſtate the ulceration commonly ſucceeds the hæmorrhage; but, in the ſecond, it more frequently becomes the cauſe; for being nature's effort, by means of the abſorbing veſſels to get rid of tubercle, matter or other extraneous ſubſtance in the lungs, the blood veſſels are thereby often eroded, and ſo pour forth their contents. And if a portion of the lungs becomes indurated, the circulation will be carried on with more difficulty; and, when any accidental fulneſs takes place, there will be moſt probably rupture of the neighbouring veſſels and conſequent hæmorrhage.

The hæmorrhage in this ſecond ſtate, therefore, is in general a conſequence of the other morbid affections. Here the cure becomes more difficult and uncertain; and the ſucceſs will depend much upon the nature of the concomitant diſeaſe: yet under whatever circumſtances the patient may be, he will ſoon be ſenſible of the great advantages reſulting from the due regulation of his drink to be hereafter mentioned. And it may, perhaps, be ſatisfactory to know, that, from whatever cauſe the hæmorrhage proceeds, our principle is equally applicable, and will not only tend to fulfil the chief indication of healing the bleeding veſſels, but alſo be a principal mean of removing all the other pulmonary affections, by leaving the lungs leſs embarraſſed in the performance of their natural functions.

This ſecond ſtate of pulmonary hæmorrhage alſo comprehends all wounds penetrating the lungs, as by a ball, ſword, or bayonet; in the the cure of which the principle of a moderate uſe of liquids is of infinite importance.

We now go on to the treatment; which will include both the ſtates of this diſeaſe, viz. active hæmorrhage from the lungs, either with, or without, other pneumonic affection. Here I beg leave to call the attention of the reader to the plethoric ſtate of the ſyſtem which generally exiſts in active hæmorrhage, to the diſtended ſtate of the blood veſſels, and their conſequent increaſed action; from which he will readily perceive, that this diſtention and increaſed action are the chief cauſes of the hæmorrhage, and the chief impediments to a cure.

And if he pays proper attention to the particular ſtructure of the parts affected, to the ſize and number of their blood veſſels, to the great quantity of blood circulated through them, and to their conſtant motion, he will ſoon be convinced of the danger of the diſeaſe; while the general circumſtances juſt mentioned will intimate to him the moſt proper mode of relief.

It may be worthy of obſervation, that the doctrine, now delivered, is, in general, applicable to all caſes of active hæmorrhages, or where they are attended with fever, although more particularly ſo in thoſe of the lungs: and this fever, or increaſed action of the heart and arteries, the practitioner will attack by every mean in his power. For this purpoſe, a ſtrict adherence to every part of the antiphlogiſtic regimen, has been recommended: but from this I make an exception of that part of it, which commands plentiful drinking or dilution, for reaſons to be hereafter given. The remedies for active hæmorrhage from the lungs may be ranked as follows, which however is rather the order of their exhibition than of their importance. They are bleeding, purging, limitation of liquids, ſaline nauſeating medicines, bliſters, ligatures on the extremities, &c. all of which we ſhall briefly conſider in the order in which they are placed; and ſhall begin with

Bleeding. In all caſes of active hæmorrhage, bleeding has been conſidered as a very ſovereign remedy; and it certainly is ſo when uſed with moderation: but, like every other active medicine, it requires proper circumſpection and regulation in its uſe.—For, as the blood is the vital fluid which warms, nouriſhes and ſupports every part of the body, and as its loſs is very difficultly made up, ſo it ought never to be taken away excepting under the moſt urgent circumſtances. Since the fatal doctrine of lentor was introduced, it may be queſtioned whether as many of the human race have not fallen ſacrifices to the lancet as to the ſword: for it muſt be allowed that the one is as deſtructive as the other in improper hands.

I have been led into theſe obſervations from having ſeen practitioners, of great reſpectability and eminence, reſting the chief ſtreſs of the cure of pulmonary hæmorrhage on repeated bleedings; in almoſt all of which caſes the patients either became conſumptive, or remained invalids for many months after the cure. That bleeding is a powerful and ſpeedy mean of leſſening diſtention, and of diminiſhing the increaſed action of the heart and arteries is well known; and it ought to be employed, without delay, on every preſſing occaſion: but when the cure can be accompliſhed without a repetition of it, the patient will recover more ſpeedily than if his ſtrength is exhauſted by the lancet. When the moſt urgent ſymptoms, therefore, are removed, the other means of emptying the veſſels and of leſſening action, whoſe debilitating effects are not ſo permanent as thoſe of bleeding, ſhould be adopted; ſuch as purgatives and ſaline nauſeating medicines, never loſing ſight of a proper regulation of the liquids taken by the patient. By purſuing this method I have always found one bleeding ſufficient: and after the removal of the diſeaſe the patients have generally been in better health and ſpirits than before their indiſpoſition. The quantity of blood taken away in this one operation I have always regulated according to the urgency of the ſymptoms.

Purging comes next in order on our liſt of remedies: and, in active hæmorrhages of the lungs, when the veſſels are over-filled, it becomes of infinite ſervice; not only by diminiſhing the quantity of fluids in the blood veſſels in general, but alſo by determining the blood from the parts affected, and thus giving the ruptured veſſels time to unite. In order that purging may have its full effect, ſcarcely any liquid ſhould be allowed during the operation. For neither your bleeding nor purging will have the deſired effects of taking off the diſtention of the veſſels, if theſe veſſels are immediately filled again by a quantity of diluting liquors, which is commonly preſcribed on theſe occaſions. It may be neceſſary to ſpecify what purgatives are moſt uſeful. All the ſaline purgatives, as coinciding with the antiphlogiſtic plan followed in theſe caſes, are proper. Hoffman gave the preference to the magneſia vitriolata, which is the purgative I have, in general, uſed: and I think it poſſeſſes certain antiſpaſ-

modic

modic and other powers, as well as its evacuant properties, which may aſſiſt in the cure of this diſeaſe.

The *limited uſe of liquids*, which is our *grand principle*, upon which the hinge of ſucceſs in treating the diſeaſe now under conſideration muſt turn, is placed next in order, although of the firſt importance. As the body, in its healthy ſtate, is continually employing and diſcharging a particular portion of liquid, it is neceſſary that a certain quantity ſhould be taken: but it commonly happens that from pleaſure, or an evil habit, we drink much more than is required, and ſo over-diſtend the veſſels, and embarraſs nature in many of her ſalutary operations. In health, the quantity abſolutely neceſſary is very inconſiderable; and, in ſickneſs, we often drink too much. This has conſtantly been the caſe in pulmonary diſeaſes; and particularly in hæmorrhages from the lungs, according to the common method of treating them. Practitioners had ſurely forgotten that the chief cauſe of the rupture and hæmorrhage, and the chief impediment to the cure, was the diſtention or too great fulneſs of the blood veſſels; otherwiſe they would not have added to this fulneſs and diſtention by their plentiful dilution. When no very urgent ſymptoms of hæmorrhagy are preſent, a pint of liquid, including tea and every other kind of fluid taken by the patient, is ſufficient in twenty-four hours, and cannot ſafely be increaſed. But in the watchman's caſe, hereafter-mentioned, where apoplexy was preſent, accompanied with ſtrong full pulſe, as well as the hæmorrhage, notwithſtanding I bled and purged him, I allowed him no drink for the firſt ſix hours, and half a pint only for the next twenty-four hours. He drank nothing during the operation of the phyſic: and the change produced by this regulation of liquid, even in a very ſhort time, was aſtoniſhing. His veſſels, of courſe, became emptier; fever and thirſt were much abated; the apoplectic ſymptoms had diſappeared; and, in ſhort, all the morbid affections were more favourable.

From what hath been ſaid I conceive it will be allowed that a proper regulation of the liquids taken by the patient is of the greateſt importance in the treatment of pulmonary hæmorrhage, and experience enables me to aſſert, that, if early and proper attention is paid to this principle, the patient will, in general, be ſpeedily reſtored; whereas, if neglected, and a contrary method purſued, even all the other means of cure may prove ineffectual.

In a late converſation with a learned and intelligent Foreigner I was informed that almoſt all the French, who are taken with any conſiderable bleeding from the lungs, ſink under the diſeaſe. On enquiring how much liquid they generally drank in twenty-four hours, he aſſured me the quantity was commonly very conſiderable; and that, when a purgative was given, the direction conſtantly was to drink *abondament.* If ſo, the efficacy of our principle receives additional ſupport; while the mortality reſulting from a very oppoſite treatment is eaſily accounted for.

The *Saline Nauſeating Medicines* next claim attention: and, in active hæmorrhage, are certainly of conſiderable uſe by leſſening the increaſed action of the heart and veſſels, and by determining the blood to the ſurface of the body. And, if we add to them, occaſionally, ſome mild narcotic medicine, which may allay cough or irritation without increaſing the action of the ſanguiferous ſyſtem, they will, without doubt, aſſiſt the general plan of cure.

For fulfilling the latter intention, opium has been recommended: but I always prefer the ſyrupus papaveris albi to the tinctura opii; the former poſſeſſing ſedative powers ſufficient for our purpoſe, while the latter cannot be ſo ſafely uſed on account of its ſtimulating properties. On moſt occaſions, however, I have preferred the ſuccus cicutæ ſpiſſatus to both.

The following formula I commonly uſe, varying the quantities of the ingredients according to circumſtances.

℞. Kali præparati ſcrupulum unum,
Succi Limonum, q. ſ. ad ſaturationem,
Magneſiæ Albæ ſcrupulum unum,
Nitri grana decem,
Vini Antimonialis guttas viginti,
Lactis Amygdalarum unciam cum dimidia, &
Syrupi Papaveris Albi drachmam unam (vel, ejus loco, Succi Cicutæ ſpiſſati grana quinque).
Miſce, ut fiat hauſtus 4tâ quâque horâ, vel pro re natâ, ſumendus.

Bliſters have generally been ſuppoſed uſeful in hæmorrhages of the lungs by taking off ſpaſm, and aſſiſting the determination to the ſurface of the body: I have, therefore, often employed them as auxiliaries to the general treatment.

Ligatures on the Extremities have been alſo uſed in this diſeaſe, particularly by the Ancients;

cients: and they may be of ſervice by retarding the blood in its progreſs to the heart, and ſo allowing the circulation through the lungs to be carried on more gently; and, by thus leſſening the diſtention of their blood veſſels, give the orifices time to unite. For, as the whole blood brought to the right ſide of the heart muſt paſs through the lungs in its paſſage to the left ſide, it ſurely follows that if a quantity of that blood, which is in the habit of returning to the right ſide of the heart, is arreſted in the arms or legs, the quantity thrown into the lungs will be diminiſhed in proportion; from which their veſſels will become emptier, and thus the ligatures on the extremities will aſſiſt in accompliſhing a cure. I ſhould have conceived it unneceſſary to obſerve that the nearer theſe ligatures are to the trunk of the body the better, had I not obſerved ſome authors adviſing to apply them to the wriſt.

On Wounds of the Lungs. Before we conclude our remarks on hæmorrhagy, we ſhall beg leave to ſay a few words on recent wounds penetrating the lungs; where our principle of the limited uſe of liquids is particularly concerned, and will greatly aſſiſt the Surgeon in performing a cure. If the reader will conſider that, in wounds of the lungs, there will be more or leſs of extravaſation into the cellular membrane, as alſo into the aërial ſyſtem, which will produce more or leſs of irritation, inflammation, cough, and fever, and which muſt be either abſorbed or expectorated; and that the wounded veſſels are alſo to be healed: he will readily believe, that the more quiet the lungs are kept, and the more empty their veſſels are retained, the ſooner and the eaſier will nature accompliſh theſe ſalutary operations.—For this purpoſe, therefore, a due regulation of liquids is to be particularly enjoined, as nothing will contribute more towards a cure; although moderate bleeding and purging, together with the ſaline nauſeating medicines, and bliſters will alſo aſſiſt in removing the diſeaſe.

The following caſe came under the care of a very reſpectable medical friend; a man of correct judgement, and great veracity, who related it to me. In the year 1781, a ſoldier, in America, received a ſhot above the left breaſt, and the ball paſſed through the lungs, and alſo the ſcapula: from the uneaſineſs of moving, and ſome other accidental circumſtances, he lived for four days without drinking any thing, but a very ſmall quantity of barley water, or weak chicken broth. This ſoldier not only recovered ſpeedily, but marched afterwards through almoſt the whole of North America, and is perhaps alive at this moment.

I recollect a caſe of a wound of the lungs, inflicted by a bayonet, which happened above nine years ago, and by a thruſt from below upwards, and paſſed into the cheſt three or four inches; where the patient, finding pain when he moved or ſwallowed, would ſcarcely taſte any thing for two days. He recovered in the courſe of a few weeks, and is now alive. Thus, from the uneaſineſs of moving or ſwallowing, have the patients been prevented from drinking; and thus our principle of keeping the lungs at eaſe hath been accidentally adopted, and a cure thereby accompliſhed. If wounds of the lungs were always treated in this way, I conceive all the patients would recover, excepting in caſes of mortal wounds occaſioned by the deſtruction of ſome great blood veſſel.

From henceforward, therefore, I truſt the proper limitation of liquids will be more particularly attended to: which may be the happy mean of ſaving the lives of many of the brave Britiſh ſailors and ſoldiers, who are now glorioſly employed in our defence.

Having already demonſtrated that, in active hæmorrhage, the veſſels are in general full, diſtended, and acting too vigorouſly, it will be ſuperfluous to obſerve that bark and elixir of vitriol, and every other tonic medicine, as keeping up that action, will be highly improper, and tend to increaſe the diſeaſe. For it has ever been, and ever will be found, that the more theſe medicines are given in active hæmorrhage, the longer will the bleeding continue, and the more obſtinate will be the cure.

When the fever is gone, and the hæmorrhage becomes what is called paſſive, where the veſſels are in general deficient in their contractile power; then, and then only, can aſtringent and tonic medicines be allowed.

The following is a pleaſant, elegant, and effectual preparation of this kind, and has ſcarcely ever failed me in thoſe caſes of paſſive hæmorrhage where I have employed it.

Decoctum Roſarum *.

℞. Roſarum Rubrarum exſiccatarum drachmas tres,
Aquæ puræ libram unam: coque ad libram dimidiam, & cola.

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* Vide the Appendix.

℞· Decoɫi Roſarum ſupra-præſcripti uncias duas,
Tincturæ Opii guttas tres, vel q. ſ.
Syrupi Croci drachmam unam,
Elixir Vitrioli (Ph. Vet. Lond.) guttas octo, vel q. ſ.
Miſe, & fiat hauſtus quartâ, 6tâ, vel 8vâ, quâque horâ ſumendus.

Here alſo, as well as in active hæmorrhage, a due attention is to be paid to the quantity of liquids taken by the patient, and more or leſs to be allowed according to the degree of the hæmorrhage, and ſtate of the vaſcular ſyſtem. Having, in the third and fourth volumes of Medical Facts and Obſervations, related ſeveral caſes of active hæmorrhage ſucceſsfully treated in the manner before-mentioned, and as the general principle I have adopted is new, and will be by them farther illuſtrated, it may not be improper to add them here: they therefore follow, as they were then publiſhed, together with the reflections and obſervations which then occurred.

Several Caſes of Pulmonary Hæmorrhage, ſpeedily and ſucceſsfully cured by a limited Uſe of Liquids *.

CASE I.

On the 6th day of March, 1792, I was requeſted to viſit Mr. S——, a man of a florid complexion, full habit of body, and about forty-five years of age. He had been much affected with head-ach, and hard dry cough, for three or four weeks. His pulſe was now full, frequent, hard, and quick; and the veins upon his hands and arms were ſo much diſtended, that they appeared as if ready to burſt. The cough was almoſt inceſſant, attended with conſiderable expectoration of florid frothy blood, which made its appearance this morning, after a ſevere fit of coughing, and his head-ach ſtill continued.

The plan I followed was the following:

I took, from a large orifice in the arm, twelve ounces of blood, which from the long time it remained fluid after being taken from the arm, and the conſequent appearance of (what is commonly called) inflammation, both indicating the great action of the ſanguiferous ſyſtem, ſeemed to point out the neceſſity of employing the moſt vigorous antiphlogiſtic treatment. Much danger was alſo to be apprehended from the enlargement of the opening of the ruptured veſſel.

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* Vide Medical Facts, &c. Vol. III. p. 68.

Accordingly, I ordered him a ſaline draught, with antimonial wine, to be taken every three hours, adding to the night draught ſome ſyrup of white poppies, and an opening ſaline draught to be taken the morning following, and repeated every other morning.

This courſe of medicine, together with abſtinence from animal food, and a ſtrict adherence to a light cooling diet, was regularly purſued for three days; during which time the bleeding, although moderated, ſtill continued, but the cough was much better.

9th. He was directed to continue the ſame diet, and to avoid much exerciſe; and the turgid ſtate of the veins of his hands admoniſhing me that his veſſels were ſtill too full, it occurred to me to adviſe, inſtead of a ſecond bleeding, that he ſhould drink as ſparingly as poſſible; from which I thought the veſſels would become leſs full, and the ruptured veſſel have a greater chance of uniting than when conſtantly diſtended by drinking; and that, if I could avoid taking away more blood, my patient would recover from his indiſpoſition much ſooner than if I reſted the chief ſtreſs of the cure upon this operation. He was, therefore, allowed a pint of liquid only, including tea and every other kind of drink, (all of which were given cold) in the twenty-four hours. When thirſty, I recommended it to him to ſuck an orange or lemon, inſtead of drinking. On former occaſions of this kind, viz. in active hæmorrhages, I have preſcribed (as is the common practice) cooling emulſions, milk whey and other diluents, in conſiderable quantities, with a view of relaxing the vaſcular ſyſtem, and thereby leſſening its increaſed action, not conſidering that the ſtimulus of diſtention kept up this action, and was, therefore, one of the chief things I had to guard againſt. But as there is now little to be dreaded from the Boerhaavian lentor, ſo there is no particular occaſion for the great dilution commonly practiſed, and which ſeems to have been founded upon this doctrine. The medicines preſcribed this day were ſimilar to the former.

10th. I found him very cool, and without cough or expectoration of any kind. The pulſe was ſofter, leſs frequent, and in every reſpect better. The appearance of the cutaneous veins alſo was ſo different, that I was convinced this great alteration for the better was chiefly to be attributed to his having avoided much drinking during the preceding day and night. The draughts kept the body regularly open once or twice a day, and induced a ſoft ſkin and comfortable ſleep. They were, therefore, continued for three days, four every day; and three days more, two every day, ſtill obſerving the ſame rule as to drinking. They always produced the ſame ſalutary effects. From this time the patient was perfectly well, and has remained ſo ever ſince.

In this caſe it would appear probable that no particular pneumonic affection exiſted, excepting the bleeding, which was moſt probably occaſioned by a plethoric ſtate of the conſtitution and particular determination to the lungs by the cough.

CASE II.

Soon after my attendance on the above patient, another caſe of hæmoptyſis occurred, but which differed from the former in being attended with conſiderable pneumonic affection beſides the hæmorrhage. The patient was a tall, thin man, about thirty years of age, of a pale complexion, narrow cheſt, and high ſhoulders, and had been affected with a ſevere cough for nearly four months previouſly to his application to me, accompanied with much yellow expectoration, and was ſuppoſed by his friends to be in a deep decline. He had no night ſweats; but for the laſt three weeks had been affected with a continual pain of the right ſide; which, as far as I could diſcover, did not originate from any rheumatic affection of the external muſcles, but from ſome internal diſeaſe of the thorax, and which I conceived to be a ſlow inflammation of the lungs, from which, and the violence of the cough, the hæmorrhage proceeded. He applied to me in the beginning of April, when he was coughing violently, and bringing up blood in mouthfuls. He had conſiderable fever, with a full hard pulſe. I took from him ten ounces of blood, and preſcribed in every reſpect as in the foregoing caſe, enjoining to him great attention not to drink more than a pint of liquid in twenty-four hours. This, and every other rule directed, he regularly obſerved for about three weeks, when the bleeding had ceaſed for three or four days, and alſo the pain in the ſide. But returning imprudently to his former diet, and drinking the uſual quantity as when in health, previouſly, as I ſuppoſe, to the obſtruction or inflammation of the lungs being removed, his cough returned, with ſome little appearance of bloody expectoration, mixed with that kind of yellow mucus, which is commonly diſcharged by mucous ſecreting ſurfaces when inflamed. Theſe ſymptoms, however, were entirely removed in the courſe of ten days, by a ſteady attention to the ſpare diet, and abſtinence from liquids, formerly recommended, and the medicines before uſed.

Since then he has been, and now is, in the moſt perfect health, without cough, pain in the ſide, or any other thoracic or pneumonic affection. It occurs to me that this ſecond attack, and the ſucceſs of the ſubſequent treatment, point out the delicate ſituation of the lungs, and alſo the efficacy of this method of cure.

Having related the above two caſes with every neceſſary preciſion, I ſhall beg leave to offer ſome few obſervations on active hæmorrhage in general, and on that of the lungs in particular. In all active hæmorrhages a plethoric ſtate of the ſyſtem generally exiſts: all the blood veſſels of the body are full, diſtended, and acting vigorouſly; and hence, very commonly, rupture and conſequent hæmorrhage.

Therefore the chief proximate cauſe ſeems to be diſtention and conſequent increaſed action of the veſſels: Dr. Cullen, indeed, adds congeſtion of blood, which certainly may happen either from accidental determination of blood to a part, or ſome particular fault in the original conformation, or acquired relaxation, of the coats of the veſſels of certain parts. But it is well known that hæmorrhages may ariſe from general diſtention, without any particular congeſtion; and, in this caſe, will happen wherever the vaſcular ſyſtem is weakeſt or leaſt ſupported. The proximate cauſe being clearly aſcertained, the method of cure will appear obvious. Remove the preternatural diſtention of the veſſels, and their action will ſoon diminiſh; then nature, with very little aſſiſtance, will do the reſt. Although this is evidently the caſe, it appears ſingular that, hitherto, almoſt all practitioners have neglected the moſt effectual method of accompliſhing this deſirable purpoſe, viz. by a due abſtinence from liquids. In Dr. Moffatt's tranſlation of Aretæus, page 347, are the following words: "The drink ought to be very ſparingly "exhibited, for moiſture is diſadvantageous in "a dry diet." But, although this was written when treating of hæmorrhage, the intentions of Aretæus were only that the aſtringency (upon which he ſeemed to place his chief hope) of his diet might not be weakened by drinking.

The idea of moderate drinking is adopted by Dr. Rowley, in his treatiſe on "Female "nervous diſeaſes," publiſhed in 1788. When treating of the "Immoderate flow of the "menſes," page 32, he obſerves, "as hæmor-"rhages ſeldom happen, unleſs there be a ſuffi-"cient quantity of blood in the body to rup-"ture the veſſels, one principal part of the cure "conſiſts in not only obtaining, but preſerving "a diminiſhed quantity of blood, by a great "*abſtinence* from liquids; for by this means, the "very ſources of ſupply are cut off. If little "be drank, the blood veſſels which are, or have "been, diſtended beyond their proper dimen-"ſions, will gradually contract themſelves to "their original ſize, acquire ſtrength daily, and "not having ſo large a column of blood to circulate, they will reſiſt the morbid diſpoſition "of nature to evacuate ſo violently the catamenia." But the late celebrated Dr. Cullen, when treating on hæmoptyſis, particularly recommends, that "every part of the antiphlogiſtic regimen be ſtrictly enjoined *," which includes "taking in large quantities of mild, antiſeptic liquors †:" and ſays, that the phlogiſtic diatheſis is to be taken off by bleeding, more or leſs, according to circumſtances. If, however, the ſtimulus of diſtention is kept up by filling the veſſels with liquids, the good effects of the bleeding are counteracted, and a frequent repetition rendered neceſſary—Whereas, if abſtinence from liquids be particularly attended to, one bleeding will have more effect, than three or four, if accompanied with that part of the antiphlogiſtic regimen, and the loſs of blood be thereby prevented; which, conſidering its importance in the conſtitution, and the difficulty with which its loſs is made up, ſhould be at all times avoided when poſſible.

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* Firſt Lines of the Practice of Phyſic, Vol. II. p. 353, 4th Edition.

† Ibid. Vol. I. p. 132.

Of all caſes of hæmorrhagy, that from the lungs is the moſt dangerous in its nature, and moſt difficult of cure. This will appear evident if we recollect their particular ſtructure, their large and numerous veſſels, their conſtant motion, &c.

As to their ſtructure, anatomy demonſtrates that they are compoſed of a congeries of blood veſſels, abſorbents, and nerves, together with the air cells; and that all theſe are only connected by the cellular membrane, the common connecting medium of the body: for I do not mention their pleuritic covering, as I am only ſpeaking of their ſubſtance. The blood veſſels, with which alone our preſent ſubject is connected, are very large, and in greater number than in any other part of the body of the ſame ſize. This was abſolutely neceſſary to circulate the very large quantity of blood generally ſent to them. Haller obſerves*, that the quantity of blood which enters into the lungs is equal to, or even perhaps greater than, that which is ſent in the ſame time throughout the reſt of the body. And, as the chief buſineſs of the lungs is for reſpiration, by which they are kept conſtantly in action, ſo it will appear evident why hæmorrhages here are more dangerous, as well as more obſtinate to cure, than in any other part, as their conſtant motion counteracts and prevents the union of the ruptured veſſel.

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* Prim. Lin. Phyſiol. § 246.

A Caſe of Pulmonary Hæmorrhage, with Remarks on Tubercle, Induration, Conſumption, &c.[*]

CASE III.

Having, in the third volume of Medical Facts and Obſervations, related two caſes of pulmonary hæmorrhage, and from them endeavoured to demonſtrate that the proximate cauſe of active hæmorrhage often conſiſts in diſtention and conſequent increaſed action of the blood veſſels, and to point out that abſtinence from liquids is a principal mean of removing this diſtention; I ſhall now beg leave to add another, which lately occurred, in farther confirmation of that doctrine, and of the advantages reſulting from ſuch a method of treatment. The patient was a robuſt man, of a ſanguineous temperament, and about ſixtyfour years of age. He had been affected with a ſevere cough for near four months before the preſent attack; and during the laſt ſeven or eight weeks had been ſpitting blood, mixed with a yellow expectoration; but without any pain in or about the cheſt.

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[*] Vide Medical Facts, &c. Vol. IV. p. 129.

Being ſent for on the fourth day of October, 1792, I found him in an inſenſible ſtate, as if from oppreſſion of the brain, with occaſional ſtrong contractions or convulſions of the right arm. His pulſe was ſtrong, frequent and full; his tongue was furred, and his breathing laborious. He had been juſt brought into the houſe from a Stone-maſon's yard, where he was employed in ſawing.

The perſons about him informed me, that, while at work, he was ſeized with a fit of coughing, and brought up about three or four pints of blood; that he ſoon after became inſenſible, and was immediately brought home. Conſidering the great hæmorrhage which had taken place, and the apoplectic ſymptoms now preſent, I conceived my patient to be in conſiderable danger, and that the moſt active method of relieving him ſhould be adopted: accordingly ſixteen ounces of blood were inſtantly taken from a large orifice in the arm. The blood, when coagulated, was covered with the buff coat, as it is called. A few minutes after the operation he became ſenſible, and complained of great pain in the anterior part of the cheſt; which, he ſaid, he had firſt perceived that morning. About half an hour after the bleeding, he took a purging draught, chiefly compoſed of magneſia vitriolata. A large bliſter was alſo applied to the breaſt. He was particularly directed to refrain from drink during the operation of the purgative medicine; and, if thirſty, only to moiſten his mouth and throat with a little barley water.

In the evening (ſix hours after my former viſit) I found him ſenſible, with leſs fever, his cough quiet, his breaſt eaſier, and he had not brought up much blood. His medicine had purged him ſeveral times.

A ſaline draught containing twenty drops of antimonial wine was now directed to be taken every ſix hours; he was ſtrictly enjoined to drink about half a pint only of liquid during the firſt twenty-four hours; and in every other reſpect to adhere rigidly to the antiphlogiſtic regimen.

October 5th, he had reſted pretty well, and expectorated about an ounce or two only of blood, which was chiefly in coagula: his breaſt was eaſier, but ſtill a little tight; his pulſe was much improved, and his ſkin was cool and moiſt. He had little thirſt, and his tongue was leſs furred. The uſe of the ſaline draught was continued, and the opening draught was directed to be repeated in the morning. Being ſo much better he was now allowed a pint of liquid (including tea, &c.) in the twenty-four hours, and the ſame quantity only was permitted every day during the whole of his illneſs.

October 6th, he was ſtill much better: he had reſted well, had leſs cough, leſs fever, little bloody expectoration, and his pulſe was nearly natural: his cheſt was much eaſier.

From this time to the 12th he continued gradually to recover. He had no expectoration of blood after the 8th, but the ſaline draught, and likewiſe the purgative medicine, were occaſionally repeated, and he perſevered in the limited uſe of liquids till the 12th, when I thought it unneceſſary to viſit him any longer. His pulſe was then ſixty-eight in a minute, and he was apparently in good health, only a little weak.

I afterwards learned that, contrary to my directions, he went upon duty, as patrole, on the Monday following, the 15th day of October.

Conſidering, therefore, the nature of this office, the ſeaſon of the year, the age of the patient, and the ſhort time ſince his recovery, it cannot ſeem ſurpriſing that the diſeaſe was reproduced; accordingly, on the 25th, he was again ſeized with fever, difficult breathing, cough, and hæmorrhage. He continued, notwithſtanding this return of the complaint, to attend his duty regularly until Sunday the 28th, when he was again taken with conſiderable bleeding, while on the patrole, and inſtantly expired.

On Tueſday the 30th, having an opportunity of inſpecting the body, the following appearances preſented themſelves: the thorax and abdomen being laid open, we obſerved on the anterior ſurface of the right lung an incipient inflammation, which, however, could not account for the patient's death, for, on farther examination, it ſeemed evidently to be occaſioned by the hæmorrhage. There were alſo ſome adheſions, apparently rather veſtiges of former than of any recent inflammation. There were no tubercles. A ſmall portion of the aorta was oſſified. All the abdominal viſcera were ſound. In the ſtomach there was ſome coagulated blood, which had been ſwallowed; but there was not the ſmalleſt eroſion of its coats.

In the two former caſes of hæmoptyſis, I have noticed the great difficulty of curing a ruptured veſſel in the lungs, on account of their conſtant motion, and the great quantity of blood circulated through them; but that this difficulty might be, in general, overcome by a ſteady adherence to the plan of cure there recommended, viz. moderate bleeding and purging, but particularly a due abſtinence from liquids. The ſucceſs attending the treatment of the preſent caſe muſt evidently eſtabliſh the ſuperiority of that method of cure over every other hitherto recommended. Here a blood veſſel, of conſiderable magnitude, was ruptured in a part of the body which, from its natural office, muſt be in perpetual motion, and where no local application could be made; yet this rupture was healed in almoſt as ſhort a time as the moſt experienced Surgeon can heal an external accident of the ſame nature, even with the aſſiſtance of compreſſes and bandages. For example, I have ſeen a rupture of ſome ſuperficial veſſels require theſe applications for many days. It may be ſaid that the bleeding, which has been more or leſs plentifully uſed (I mean as to quantity, for it was never uſed more than once in each caſe) according to the urgency of the ſymptoms, was the chief mean of cure. But a practitioner, who has ſeen a patient blooded twelve or thirteen times for an hæmorrhage from the lungs, and ſtill ſink under the diſeaſe, will not readily ſubſcribe to this opinion.

It may be neceſſary to obſerve that the patient to whom I allude was allowed to take, and actually did drink, ſeveral quarts of diluents in the twenty-four hours. But ſuppoſing he had recovered, after ſuch loſs of blood he muſt have remained infirm for many months: whereas this patient, who was ſo ſoon relieved by abſtinence from liquids, had he been in eaſy circumſtances, and could he have kept from labour and improper expoſure to the night air, for another week or two, might have obtained a perfect and permanent cure, without any particular diminution of bodily ſtrength.

Reſpecting the other medicines, they were doubtleſs of ſervice, and conſpired to effect a cure, which, had the uſual quantity of diluents been uſed, I am convinced, would, notwithſtanding, have been much more tedious. For in vain do practitioners attempt to leſſen diſtention by emptying the veſſels, either by purging or bleeding, if they are immediately filled again by plentiful drinking. The ſpare uſe of liquids, therefore, may juſtly be conſidered as one of the greateſt improvements in the modern treatment of hæmorrhage: and particularly in hæmorrhages from the lungs. And why ſhould not the idea be carried farther? Indeed, from ſome caſes I have lately attended, I think I may venture to aſſert, that, in all diſeaſes of the lungs, moderate drinking will be of ſervice. For ſeeing they are a congeries of veſſels, if theſe veſſels are overfilled, or kept in a continued ſtate of diſtention, they may ſo preſs upon one another that their healthy actions ſhall be either prevented or greatly impeded, particularly the actions of the abſorbent ſyſtem: whereas, if they are but moderately filled, the different ſyſtems of veſſels are left more at liberty to exerciſe their reſpective functions, either in the buſineſs of health, or in the removal of diſeaſe. When tubercles are formed in the lungs, why ſhould they not be abſorbed? We know that the moſt ſolid tumors in other parts of the body frequently diſappear; and that even bone itſelf is capable of being abſorbed, as is clearly demonſtrated by the different changes which take place in it as well in health as in diſeaſe. And in the lungs there are many abſorbent veſſels, which, if their actions were not leſſened or prevented, might ſoon remove the moſt confirmed induration of their ſubſtance. As emetics are powerful promoters of abſorption, is it not on this principle that many patients, ſeemingly labouring under tubercles of the lungs, have been cured by vomits, particularly of the ſtronger kind? I hope the time is not far diſtant when practitioners, being better acquainted with the laws and functions of this important ſyſtem, ſhall be enabled to direct its actions with more certainty, either in removing a tubercle or the moſt ſchirrhous tumor. But when this happy period arrives it can only be carried into effect by a proper regulation of the quantity of liquids; and, in general, a diminution of the uſual preſcribed quantities. Perhaps the advantages ariſing to conſumptive patients from a warm climate and the uſe of flannel, are principally from their doing the ſame thing as abſtinence from liquids, viz. determining the tide of circulation to the ſurface of the body, and thus leaving the veſſels of the lungs more empty, and, therefore, more ready to recover themſelves when under the influence of diſeaſe.

From the above caſes I hope the reader is convinced that the moderate uſe of liquids is not only of infinite importance in the treatment of hæmorrhages in general, but is alſo more particularly ſo in that of active hæmorrhage from the lungs.

After the ſucceſsful treatment of caſe ſecond, where conſiderable pneumonic affection exiſted, beſides the hæmorrhage, and which was removed, together with it, by our plan of cure, I was induced to view the ſpare uſe of liquids as a principle of greater importance than I had at firſt imagined: and, having recollected that the lungs were chiefly compoſed of veſſels, among which inflammation, tubercle, induration, and all the other morbid affections muſt ariſe, I conceived that the leſs theſe veſſels were diſtended, the leſs would the parts affected be embarraſſed, and the more readily would a cure be accompliſhed. It therefore appeared applicable, not only in the treatment of hæmorrhage, but alſo in that of all the other diſeaſes of the lungs. Accordingly many ſucceſsful trials have confirmed me in the opinion, that, in the treatment of every pulmonary complaint, a proper limitation of liquids will be productive of great advantages to the patient. For, in recent caſes, a cure may be, thereby, more ſpeedily accompliſhed; and, in even the moſt deplorable of theſe melancholy affections, the ſick will derive much eaſe and comfort from this regulation of their drink, as the following caſes, and thoſe already related, will ſufficiently demonſtrate.

In attempting an explanation of this doctrine and its application in the other morbid affections of the lungs, we ſhall begin with Aſthma previouſly to our remarks on Conſumption, as the former diſeaſe is often a prelude to the latter.

CHAP. III.

Obſervations, and practical Remarks on the Aſthma.

WE ſhall now proceed, in the ſame curſory way in which we have hitherto proſecuted our remarks, to point out the application of our principle in the cure of Aſthma. Since the idea of employing this principle in the treatment of this diſeaſe occurred to me, ſeveral opportunities of trying the efficacy of a modederate uſe of liquids in this moſt diſtreſſing of the pulmonary affections have preſented themſelves; and they have, in general, been crowned with the ſame ſucceſs which attended my trials in active hæmorrhage. This indeed might have been naturally expected, as the ſame turgeſcence and diſtention of veſſels are generally preſent in both, as will appear from the following quotations from Sir John Floyer and Dr. Cullen, which I have extracted from their works ſince the ſucceſs of my own practice had determined me to publiſh the reſult for the public uſe.

But, before I mention the opinions of theſe reſpectable phyſicians, it may not be improper to relate one or two of the caſes which I attended and treated ſucceſsfully, and where the principle of moderate drinking was particularly attended to; introducing, at the ſame time, a few remarks, as they naturally ariſe from actual practice. Theſe caſes ſeem to me to demonſtrate that the pathology of aſthma, when conſidered as an original diſeaſe, has been in general erroneous; and that, therefore, the treatment recommended has not been accompanied with the wiſhed-for ſucceſs.

CASE I.

The patient, whoſe caſe I am now to relate, was a lady of a middling ſtature, of a pale complexion, of a full and relaxed habit of body, and about fifty-three years of age. She had been ſubject to repeated attacks of aſthma for eight years; although, in every other reſpect, ſhe had enjoyed very tolerable health. Her fits, which were always occaſioned by any great hurry or fatigue, or ſevere cold, came on very irregularly: but, when they did, they generally continued for ſeveral months. In endeavouring to trace the cauſe, ſhe informed me, that, for five years previouſly to a moſt violent attack, from which the eight years above-mentioned are dated, ſhe felt a gradual difficulty of breathing coming on, but which only particularly affected her on going up ſtairs, or on being hurried; but never in any great or permanent degree. At the beginning of the eight years, having been a conſiderable diſtance from her houſe, and there threatened by a violent ſtorm, ſhe was obliged to run home as faſt as poſſible; upon which ſuch great difficulty of breathing immediately followed, that her life was ſuppoſed to be in the moſt imminent danger. Two phyſicians being called to her aſſiſtance, the one adviſed immediate bleeding, and the other to try ſome medicine firſt. The latter plan was adopted, and the medicine (the compoſition of which ſhe knows not) vomited and purged her ſeverely; but relieved her ſo much, that there was no occaſion for the bleeding. After being indiſpoſed for many weeks, ſhe recovered: but has, ever ſince, been ſubject to repeated attacks of the diſeaſe; particularly from the beginning of autumn to the end of ſpring, during which time ſhe has very little interval of eaſe. It may be neceſſary to obſerve, that menſtruation ſtill continues, and has never been particularly interrupted, even when her aſthma has been the moſt violent.

After having been indiſpoſed about a week ſhe ſent for me, on the 25th of December, 1792, when I found her Aſthma very ſevere; ſo much ſo that ſhe could ſcarcely ſpeak to me. She had alſo much cough, and ſome expectoration, but no pain about the cheſt. Her tongue was white and dry; and her pulſe was frequent, ſrequent, but neither full nor ſtrong. I preſcribed as follows, viz.

> Capiat hauſtum emeticum ex antimonio tartarizato & vino ipecacuanhæ ſtatim: et pilulam anodynam diaphoreticam, horâ ſomni.
>
> Primo mane ſumat hauſtum catharticum e tinctura jalapii, &c. non bibendo inter operationem.

December 26th. Her emetic has anſwered very well, and ſhe has had a comfortable night. Her phyſic has operated powerfully, and ſhe breathes eaſier, and feels much relieved in every reſpect. I now allowed her a pint of liquid only for the next twenty-four hours, and ſent her a mixture, compoſed of lac ammoniacum, oxymel ſimplex, &c. to be taken every three or four hours.

27th. She has ſlept tolerably well, and is getting better. The ſame rule reſpecting liquids to be continued; only, during the operation of the following pills, half a pint of weak tea may be taken,

> Capiat hauſtum ex æthere vitriolico, &c. horâ ſomni; &, mane, ſumat pilulas duas catharticas e reſina jalapii, ſapone & calce antimonii illotâ.

28th. She has had a very good night: her medicine has operated ſeven or eight times;

and ſhe feels much better. I preſcribed the ſame æther draught to be taken every night at bed-time, and adviſed the ſame limitation of liquids.

30th. She is exceedingly well; her pulſe is nearly natural, and ſhe has ſcarcely any difficulty of breathing. Her expectoration is now almoſt gone, having gradually diminiſhed as her breathing became better. I therefore recommended her to take the æther draught for two nights, and to take another doſe of her pills; and alſo to obſerve great moderation in drinking for ſeveral days.

On the 2d of January, 1793, I found her perfectly well. She had another ſevere attack about the end of January, and got well in ſix days by a ſimilar treatment.

In June following ſhe was ſeized again; and, after being ill for ſeveral days, ſhe ſent for me on the 14th, when her aſthma was extremely ſevere. By a like treatment ſhe was well on the 19th of the ſame month.

I ſaw her towards the end of February, 1794, and ſhe was then well; and told me, with ſeeming aſtoniſhment, that ſince June, 1793, her aſthma had not returned: which was the only autumn and winter ſhe had miſſed it for the laſt eight years. She appeared lively and was not ſo corpulent as ſhe had been when I attended her. It may be proper to obſerve, that in this patient the aſthma was not hereditary.

Now the hiſtory of the commencement of this diſeaſe, in the caſe juſt now related, ſeems to me to throw conſiderable light on the nature of the aſthma, as an original diſeaſe, and to point out the proper mode of relief. For I conceive that, during the firſt five years, when the difficulty of breathing was gradually coming on, that the blood veſſels of the lungs were then, as gradually, loſing their contractile power; ſo that the blood was not very regularly propelled through them. In this caſe, congeſtion of blood muſt take place in the lungs, whenever, by hurry or any extraordinary exerciſe, the blood was ſent into them more quickly, or in greater quantity, than uſual; and conſequent difficulty of breathing muſt enſue. And, at the beginning of the eight years, when confirmed aſthma took place, it ſeems probable that, from the great exertion uſed in running home, the veſſels were ſo much diſtended as to loſe, in great meaſure, their contractile power; from which ſuch congeſtion of blood in the lungs was produced, as might have proved fatal, had not timely aſſiſtance been procured.

CASE II.

The ſubject of this caſe, Mrs. Roſe's cook, is a full young woman, of a relaxed habit of body, and about thirty-one years of age. She has been of this full habit of body from her infancy: and her father, after having been tormented with the aſthma for many years, died of the diſeaſe in the beginning of February, 1794, ſoon after my attendance on his daughter. Her father's fits generally continued for many months at a time, without receiving any relief from a variety of medicines adminiſtered by his medical attendant.

January the 20th, 1794. This young woman has, in general, enjoyed a good ſtate of health; and has never before had any aſthmatic affection, although ſhe has been extremely ſo for the laſt eight days; and is now ſcarcely able to breathe, notwithſtanding ſhe has taken ſome oily emulſions and nitrous medicines preſcribed her by an apothecary in the neighbourhood. She is hot and thirſty, and her pulſe is frequent

quent, and rather ſtrong; and her tongue white and furred. Her face is full and nearly livid. She has alſo a troubleſome cough, but which is not attended with any particular expectoration. Laſt night, ſhe took, by the advice of her miſtreſs. a table-ſpoonful of oleum ricini, which has operated five or ſix times. She is a little relieved, but ſtill very ill. I preſcribed for her a mixture compoſed of æther, ſimple oxymel and camphor, to be taken every four hours; and particularly directed her to drink a pint of liquid only during the next twenty-four hours.

21ſt. She breathes eaſier, and has had a tolerable night. Her pulſe is leſs frequent, and her tongue moiſter.

> Repetatur miſtura, &, cras mane, ſumat hauſtum catharticum e magneſia vitriolata, infuſione et tinctura ſennæ, et cum tincturæ jalapii drachma, non bibendo inter operationem.

22d. She has had ſtill a better night, and her breathing is more comfortable, with leſs fever and leſs cough. Her phyſic has operated five or ſix times; but ſhe informs me, that, during the operation, ſhe drank about half a pint of tea. But as, from her account, the evacuations were conſiderable, we cannot ſuppoſe that the diſeaſe was in the leaſt increaſed by this little deviation.

Capiat, horâ ſomni, hauſtum æthereum cum camphorâ, &c.

23d. She has reſted exceedingly well, breathes eaſy, and her pulſe is natural; having alſo very little cough. I ordered the draught to be continued; and ſent her alſo a mixture of the ſame kind, to be taken three or four times a day.

24th. Excepting a little cough, ſhe is now perfectly well: and can run up ſtairs with the greateſt eaſe. But, leſt a relapſe ſhould take place, I directed her to continue her night draught for two nights, to repeat her purging draught once more, and to obſerve the directions above given, as to liquids, for ſeveral days.

On the 28th ſhe informed me, ſhe had ſtrictly obſerved my directions, and had been well ever ſince the twenty-fourth.

This ſecond caſe exhibits an inſtance of a very rapid recovery from one of the moſt diſtreſſing of the pulmonary diſeaſes, and under the moſt diſadvantageous circumſtances.

Her aſthma was hereditary, and the patient was ill eight days before I ſaw her; yet ſhe is perfectly cured of a diſeaſe, which ſometimes continues for many months, and often proves fatal, in the ſhort ſpace of four days. It may reaſonably be queſtioned, whether the annals of medicine can produce ſuch an example. For the aſthma has always been mentioned as a diſeaſe almoſt incurable by art, and generally conſidered as one of the *opprobria medicorum*. At any rate, the obſervations naturally ariſing from caſe firſt, and the method of cure followed in both, together with the experience I have had in treating the other caſes which have come under my care, ſeem to me to prove that this diſeaſe, when idiopathic, moſt commonly originates from too great fulneſs or over-diſtention of the blood veſſels of the lungs: which, in theſe caſes, may be juſtly conſidered as the proximate cauſe of the diſeaſe. For here I conſider the difficulty of breathing to ariſe, not from conſtriction, but from compreſſion, of the air veſſels by means of turgid or over-diſtended blood veſſels: nor do I conceive it neceſſary there ſhould be conſtriction of the bronchia, as the compreſſion above mentioned, by hindering the ingreſs of the air into the more minute branches of the air veſſels, will account for the *reſpiratio alta*, without having recourſe to ſpaſmodic conſtriction, which ſeems to have done much miſchief in the treatment of this complaint. I would, therefore, rather conſider the proximate cauſe of the diſeaſe to exiſt more generally in the blood veſſels, than in the air veſſels: and the conſtriction of the bronchia, when it happens, rather as a ſymptom than as the cauſe of the diſeaſe. And, although ſpaſmodic conſtriction may occaſionally be produced from vapours, or airs of different kinds, as well as from other cauſes, and then become the ſole original diſeaſe; it will, however, in general, either ſpeedily deſtroy, or be ſpeedily removed.

Dr. Withers, who treats of the aſthma as a convulſive diſeaſe, obſerves, page 28, "all convulſive diſorders are ſudden in their attack, "and they are often as ſudden in their termination." But this is not commonly the caſe in aſthma; for notwithſtanding that the ſevere exacerbations may ſoon diſappear, yet the diſeaſe ſtill exiſts, and will often continue for many weeks: ſometimes it will exiſt in a moderate degree, at other times great exacerbations will come on and continue, with very little remiſſion, for ſeveral days. From the two caſes above related the reader will be convinced, that they are not hiſtories of a ſpaſmodic diſcaſe, which comes on ſuddenly, and goes off in a moment; but rather a detail of morbid affections, ariſing from full and weakened pulmonary blood veſſels, and which diſappear gradually as theſe cauſes are removed. That the aſthma is more generally occaſioned by over-diſtended blood veſſels compreſſing the bronchia, agreeable to the notions already hinted, ſeems acknowledged by the practice of the moſt reſpectable phyſicians who have written on this diſeaſe, although they were wholly unacquainted with the principle upon which their occaſional ſucceſs depended. Our principles therefore are particularly applicable in aſthma, and will in general produce the moſt ſalutary effects. Indeed ſince I adopted the idea of moderate drinking in affections of the lungs, and have paid particular attention to their diſeaſes, ſeveral caſes of periodical aſthma, as already obſerved, have come under my care, which ſpeedily yielded to the above plan of cure.

Here I wiſh to obſerve, that I am well aware that Noſologiſts have mentioned a ſpecies of aſthma under the name of aſthma plethoricum: but the intelligent reader muſt perceive that the deſcription now given, as well reſpecting the preciſe ſtate of the veſſels, as the method of treatment, has not yet been properly obſerved by any author.

In the treatment of the aſthma we have been deſcribing, where no other diſeaſe of the lungs has given riſe to it, the following two general indications of cure naturally preſent themſelves; viz. 1ſt, to diminiſh the quantity of fluids in the blood veſſels, by which their over-diſtention is kept up. 2d, To reſtore the contractile power to theſe veſſels, after the turgeſcence and diſtention have been removed.

Theſe indications we ſhall notice hereafter; whilſt, in the mean time, we proceed to point out the paſſages of thoſe eminent phyſicians, whoſe writings confirm the practice we have adopted, although they were by no means acquainted with our general principles or their mode of application.

The firſt of the reſpectable phyſicians juſt mentioned is Sir John Floyer; whoſe treatiſe on this diſeaſe has been deſervedly held in high eſtimation, on account of the many excellent practical obſervations therein contained. This reſpectable practitioner, after a long unpleaſant experience in his own perſon, and an attentive obſervation of this complaint in others, ſeems clearly of opinion that fulneſs and diſtention, ariſing from efferveſcence, (as he expreſſes himſelf) of the blood of the lungs, are the chief cauſes of the aſthma; as the following paſſages from his treatiſe will clearly demonſtrate.

In his dedication* he obſerves, "and though "it ſtill be a diſpute, whether the motion of "the heart in a fever be by an irritation of the "fermenting blood, or the diſordered ſpirits; "yet it will be the ſame thing as to practice: "for by whichſoever of them the *rarefaction* "happens in the aſthma, I muſt level my me"thod againſt the *efferveſcence*, if I will cure the "fit or prevent it:" and in the 29th page of the ſame treatiſe, he ſays, "The blood of aſth"matics is very ſubject to *efferveſcencies;* and "whatſoever produces that, occaſions the fits."

Alſo, page 30, "the nature of the aſthma "conſiſts in a ſlow efferveſcence, or ebullition "of our blood, on which the ſeveral ſymptoms "of that diſeaſe depend." Sir John accordingly found that heated rooms, hot weather, the heat of the bed, volatile and all other heating medicines, tended to produce and keep up his complaints; while cool air, cold weather, and cooling medicines never failed to give relief.

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* Vide a Treatiſe of the Aſthma, 3d edition, ded. p. iv.

The diet which agreed beſt was the cool and temperate. From which he was of opinion, that Hippocrates's obſervation, " if a man eats " and drinks little, he ſhall have no diſeaſe," might be applied with propriety to aſthmatics. That the latter part of the venerable old man's obſervation is here ſtrictly applicable, will, I truſt, appear evident from what we have already obſerved. And had Sir John known how to apply it in the manner mentioned in theſe obſervations, his aſthma, which continued about thirty years, might have doubtleſs been cured in a ſhort time, and a relapſe thereby prevented.

This ſagacious phyſician, indeed, found, from actual experience, that much drinking was hurtful; and, therefore, recommended moderation. But, although practice had thus convinced him of the good effects of moderate drinking, he ſtill remained unacquainted with its particular application; as will appear from what follows. For, page 78, he obſerves, " no diſtemper re-" quires more orderly diet than the aſthma; " but eſpecially a moderation in drinking, that " the ſerum of the blood may not abound too " much, and a conſtant uſe of thoſe liquors that " are moderate neither too hot nor too cool;

" but ſuited to the conſtitutions and age. I know " a fat aſthmatic who was much relieved by " drinking very little of any liquor." Now, although Sir John thus recommends moderation in drinking, yet, when he tells you, in the ſame page, that he himſelf generally drank a quart of broom ſmall beer at dinner, you will immediately perceive he had no very correct idea of the nature of this principle or of its proper regulation.

The next author, whoſe authority we ſhall adduce in ſupport of our doctrine, is the juſtly celebrated Dr. Cullen: who, when treating of the aſthma, obſerves, " From the whole of the " hiſtory of aſthma now delivered, I think it " will readily appear, that the proximate cauſe " of this diſeaſe is a preternatural, and in ſome " meaſure a ſpaſmodic conſtriction of the muſ- " cular fibres of the bronchia; which not only " prevents the dilatation of the bronchia ne- " ceſſary to a free and full inſpiration, but " gives alſo a rigidity which prevents a full and " free expiration. This preternatural conſtric- " tion, like many other convulſive and ſpaſ- " modic affections, is readily excited by a tur- " geſcence of the blood, or other cauſe of any "unuſual fulneſs and diſtention of the veſſels "of the lungs."

The intelligent reader will perceive that, although Dr. Cullen, in the former part of this quotation, from not being able in any other way to account for the different phenomena of the diſeaſe, coincides in opinion with the moſt reſpectable practitioners who had gone before him in ſuppoſing the aſthma a ſpaſmodic diſeaſe; yet, towards the latter end, is obliged to acknowledge the unuſual fulneſs and diſtention of the veſſels which we contend for; although, even there, he does not mention the over-diſtention, which may certainly happen to every hollow muſcular ſtructure.

The Cure.

We ſhall now beg leave to point out a method of cure founded on the principles which, I truſt, we have fully eſtabliſhed. Here, as we have before obſerved, two principal indications preſent themſelves, viz. 1ſt, To take off the too great fulneſs and over-diſtention of the blood veſſels. 2dly, To reſtore their contractility and tone after they have been ſufficiently emptied.

Reſpecting the former of theſe indications, we have, when ſpeaking of hæmorrhage from the lungs, conſidered the different methods commonly employed for emptying the blood veſſels and taking off their too great fulneſs and diſtention; to which the reader will be pleaſed to refer.

He will there ſee, that, together with our *limitation of liquids*, moderate bleeding and purging have been recommended; both which may be alſo uſed in aſthma, although with a little more circumſpection towards the latter ſtages of the diſeaſe.

We ſhall juſt ſay a few words on theſe ſeparately, and notice any peculiarity which we think worthy of notice in the treatment of this diſeaſe.

Bleeding may be occaſionally neceſſary in the cure of aſthma; but the intelligent practitioner will recollect many reaſons, why it ſhould be avoided, if poſſible, in the treatment of patients of this deſcription. In ſome urgent caſes, however, where immediate ſuffocation threatens the life of the patient, this operation muſt be performed without delay. But when

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the ſituation of your patient will allow you to begin with vomiting and purging, that is, with emptying the veſſels without at the ſame time filling them again by the uſual dilution, the lancet will commonly be unneceſſary—I have never uſed it in any of the caſes above mentioned. And, in the very advanced ſtages of the diſeaſe, when the patient's ſtrength is nearly exhauſted, great caution is neceſſary in recommending it.

Vomiting and purging. In the early ſtage of aſthma, when the patient's ſtrength is good, a medicine which operates ſpeedily and plentifully in this way will be of infinite ſervice, as appears evident from the hiſtory of caſe firſt, and from the caſe of an aſthmatic lady mentioned by Sir John Floyer, page 22. But, when the ſymptoms are moderate, the vomiting will not be required, providing an active purgative is uſed and no liquid allowed during the operation. And, in aſthma, if the diſeaſe ariſes from over-diſtended blood veſſels, active purgatives, which, while they empty the veſſels, tend alſo to excite their contractile power, will be preferable to the milder ones. Here I muſt beg leave to obſerve, that my practice has uniformly contradicted the idea commonly entertained reſpecting purging in diſeaſes of the cheſt, viz. that it ſeldom relieves the veſſels of the thorax; for I have conſtantly found great advantage from their uſe, and think them abſolutely neceſſary in order that our principle of the moderate uſe of liquids may have its full and ſpeedy effects. That idea is particularly expreſſed by Dr. Cullen, and (perhaps from his authority) is but too commonly adopted by practitioners in general; from which one of the moſt powerful means of relieving the lungs, when oppreſſed, has been neglected. That purging has often cured the aſthma muſt have been ſeen by almoſt all practitioners, although not attended to ſo particularly as a fact of ſuch importance deſerved; for ſurely every one engaged in the practice of medicine muſt have, occaſionally, ſeen his aſthmatic patient cured by an accidental diarrhœa. I have often obſerved it happen, before I thought ſeriouſly of the application of this natural cure to practice. Sir John Floyer, page 91, ſays, "a gentle-" woman about 60 years old, being always aſth-" matic, fell into a diarrhœa, by which ſhe was" freed from ſtone, cholic, and *aſthma;* but" that being permitted too long, run into a con-" ſumptive ſtate, and extremely waſted her fat

" body,

"body, and diſpoſed her to ſurfeit upon every "occaſion: I cured her by rhubarb-purges, "ſteel and bitters." Here is a cure accompliſhed by nature and Sir John Floyer exactly on our principle. The diarrhœa and rhubarb-purges emptied the veſſels, and Sir John's ſteel and bitters reſtored their contractility, and tone. Notwithſtanding this remarkable caſe, Sir John repeatedly finds fault with purging, as occaſioning an effervescence of the blood: but here his theory outruns his practical obſervations, almoſt all of which tend to confirm our practice. Sir John farther obſerves, "I remember an "aſthmatic who took ſome quack-pills, by "which he had twenty or thirty ſtools; this "very much relieved him." And, page 176, he relates a caſe from Dr. Willis, cured by vomiting and purging. And, according to my obſervation, a natural cure of aſthma frequently takes place by the veſſels being emptied by an accidental purging, and the patient afterwards going into a cool conſtricting air, which reſtores tone and energy to the whole pulmonary ſyſtem. There are ſome obſervations of the ancients which give additional ſupport to this method of cure.

Ætius ſays, "maximum eſt remedium purgatio fortior per pharmaca fortiora." And Bellonius "In difficultate ſpirandi non eſt formidanda frequens et magna purgatio." And Dr. Withers*, notwithſtanding the great ſtreſs he places on the flowers of zinc, acknowledges, in a caſe of aſthma, even complicated with "general weakneſs, relaxation of the ſtomach and bowels, indigeſtion, dropſical ſwellings and rheumatiſm," where ſeveral doſes of phyſic, compoſed of ſenna, jalap, &c. were given, that purging gave conſiderable relief. His own words are, "She ſays that her phyſic always relieves her." And again, "The purging phyſic relieves her materially." And this caſe is cured by this plan and the flores zinci. Is not this an ample confirmation of the doctrine we have been endeavouring to eſtabliſh? For, by purging, the veſſels are rendered leſs full; and by the flowers of zinc, their tone is reſtored.

In the very laſt ſtages, however, of this diſeaſe, when the *vis vitæ* is nearly exhauſted, and there is conſiderable ſecretion of mucus into the bronchia, if the ſtrength is farther weakened by either bleeding or purging, ſuffocation will almoſt inſtantly follow.

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* Vide a Treatiſe on the Aſthma, by T. Withers, M.D. p. 207.

In this reſpect, the *ſpare uſe of liquids* claims a ſuperior conſideration; becauſe in no one ſtate of the diſeaſe can it be adopted improperly. For, ſuppoſing this turgeſcence of the blood veſſels in aſthma ariſes from ſome previous over-diſtention or over-ſtretching of theſe veſſels, from which they have in ſome degree loſt their contractile power, and are thereby diſabled from carrying on the circulation with that eaſe neceſſary for the healthy actions of the lungs; in the ſame way as the bladder, when over-ſtretched or over-diſtended by a ſuppreſſion of urine, loſes its expulſive power from the ſame loſs of tone and contractility of its muſcular coat. In the one caſe, as well as in the other, theſe veſſels muſt be kept pretty empty, while, by various means, you endeavour to reſtore their contractile power. A moderate uſe of liquids, therefore, is here of infinite importance: and, if properly attended to, the veſſels will ſoon recover their contractility and tone, in the ſame manner as an over-diſtended bladder recovers its natural powers of contraction, by the application of proper means, after the diſtention has been removed. For the ſame muſcular ſtructure exiſts in the blood veſſels of the lungs (as well as in all the other veſſels of the body) as in the bladder: and, by leaving theſe muſcular tubes more empty, they recover their contractility and elaſticity (which the blood veſſels alſo poſſeſs in a certain degree) ſo as to carry on the circulation through the lungs with that regularity and eaſe which prevents embarraſſment of the air veſſels, as well as of the different other branches of the pulmonary ſyſtem. Thus, in pulmonary hæmorrhage, are the ruptured veſſels allowed to unite; and thus, alſo, in aſthma, the compreſſion and conſtriction of the bronchia are removed; and, with theſe, the proximate cauſe of the diſeaſe. Whereas, in aſthma, if the diſtention is kept up by plentiful drinking, which is very commonly recommended, the diſeaſe will become worſe every hour, and may become at laſt incurable. For, independent of the preſent difficulty of breathing from the compreſſion of the bronchia by over-diſtended blood veſſels, if this compreſſion is long continued obliteration of the more minute cells of the bronchial terminations muſt take place; and, in conſequence, a permanent and perhaps deſtructive aſthma.

By this compreſſion alſo the mucus in the moſt minute cells of the bronchia will, moſt probably, be there arreſted, and its different thickened particles become the nuclei of future tubercles, as we ſhall have occaſion to mention by and by. And when theſe are formed a more permanent cauſe of difficulty of breathing commences; where, notwithſtanding, the limited uſe of liquids will be of much importance.

Bliſters have been, alſo, recommended in this diſeaſe; and, from their occaſioning a determination of the blood to the ſurface of the body, they may prove uſeful; although, if the foregoing plan is properly purſued, they will be ſeldom neceſſary.

Diaphoretics, or thoſe medicines which determine to the ſurface of the body, without heating or rarifying the blood, may alſo be, occaſionally, uſed with advantage.

Paregorics, by taking off the irritability of the lungs, will prove ſerviceable on ſome occaſions.

In the aſthma we have juſt deſcribed, unattended with inflammation, if the principles we have mentioned are attended to, the neutral ſalts and common ſaline medicines become unneceſſary; as well as the long liſt of antiſpaſmodics commonly employed in the treatment of this diſeaſe.

We now come to conſider the moſt probable means of fulfilling our ſecond indication, viz. to *reſtore the tone and contractility of the blood veſſels of the lungs after their too great fulneſs and diſtention have been removed.*

For this purpoſe I have generally found the *vitriolic æther*, *ſimple oxymel*, &c. ſufficient, and theſe certainly excite the veſſels to exertion, and thus aſſiſt them in recovering their contractile power; while the ſpaſmodic conſtriction of the bronchia (if it exiſts) will alſo, moſt probably, be thereby removed. Dr. Cullen obſerves, "the vitriolic æther has been found to give relief, but its effects are not laſting." If, however, it is ſeaſonably given, after the veſſels have been properly emptied, it will be found an uſeful remedy: as alſo the acids, ſuch as vinegar, &c. in ſo far as they alſo excite the contractile power of the veſſels. And conſidering the flowers of zinc, ſo highly extolled by Dr. Withers, as poſſeſſing conſiderable tonic powers, we think they may alſo be of ſervice in fulfilling the preſent indication.

But ſhould the patient, notwithſtanding the above treatment, remain weak and have occaſional ſhortneſs of breathing on uſing exerciſe, or after any particular exertion, I would recommend the ſteel and myrrh medicine of the late Dr. Griffiths, and other more powerful tonics, together with cold bathing. The cold bath has been recommended by ſeveral practitioners as an effectual remedy in this diſeaſe; but cannot be uſed with ſafety until the veſſels of the lungs have become tolerably empty: and, even during its uſe, a proper limitation of liquids is of much conſequence. The authors I allude to, who recommend cold bathing in this diſeaſe, are Cælius Aurelianus, Dr. Baynard, Dr. Millar, and particularly Dr. Ryan, in whoſe treatiſe the reader will find a full account of cold bathing in the aſthma*.

Reſpecting the air moſt proper for aſthmatic patients, this muſt be varied according to the circumſtances of irritability of the lungs, and of the preciſe ſtate of their blood veſſels. Hence ſome breath more comfortable in a moiſt air, of moderate temperature, while others delight in a dry and keen one. But after the veſſels have been ſufficiently emptied by the plan of cure above recommended, a cool atmoſphere, with the addition of an increaſed proportion of oxygen, or vital, air, will invigorate the ſyſtem in general, and tend to reſtore the proper contractility to the pulmonary veſſels.

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* Vide Obſ. on the Hiſtory and Cure of the Aſthma, by M. Ryan, M. D.

As the following obſervations on that diſeaſe of horſes, commonly called, broken-wind, may tend to elucidate thoſe above, on the aſthma, I hope the reader will allow me to add them in this place. Here indeed I may claim the privilege of precedent, as Sir John Floyer has, to his valuable treatiſe on the aſthma, added ſome obſervations on a broken-winded mare: which, by the by, would ſeem to intimate, that he alſo believed that a reſemblance exiſted between the two diſeaſes.

A few Thoughts on the Broken-wind in Horſes and other Animals, as being a diſeaſe analogous to the Aſthma of the Human Subject[*].

Thinking that ſome analogy exiſted between the aſthma of the human ſubject, and the diſeaſe

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[*] The term broken-wind is the moſt common Engliſh name for this diſeaſe; although an unnatural and improper one, as tending to convey a wrong notion of the diſeaſe. It is called *pouſſe* by the French, which, in Engliſh, is *ſhort-wind*; which

eaſe of horſes, commonly called *broken-wind*; and eagerly wiſhing to afford relief to that moſt noble and uſeful animal, I was induced to look into ſome of the moſt eminent of the veterinary authors, to ſee if any of their obſervations tended to confirm my ideas: and, I am happy to find, that many of their practical obſervations, as well as their diſſections after death, ſeem to confirm the general doctrine reſpecting the cauſe and cure; as, I preſume, will clearly appear from the following general abſtract of their obſervations.

The authors I allude to are M. Vitet, *Docteur et Profeſſeur en Médecine à Lyon;* and our own countryman, Mr. Taplin. I ſhall begin with the latter, interſperſing the obſervations of the former.

Mr. Taplin ſays, that the broken-wind in horſes is a defect of the lungs, and laments that all the diſſections and minute inveſtigations, which have taken place, have but little improved his knowledge of this diſeaſe, or of the method of cure. He adds, that the moſt eminent au-

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which is a much more natural appellation. An American Negro, when aſthmatic, naturally obſerves, "his wind is ſhort." And this is a very natural deſcription of the *reſpiratio alta* of the aſthmatic.

thors, who have gone before him, have only either believed or ſuſpected, that the lungs were, by ſome means, too large for the cavity of the cheſt*. He himſelf conjectures, that a viſcid, tough phlegmatic matter may gradually accumulate in the lungs, and obſtruct reſpiration; and that, after this obſtruction has formed, conſiderable increaſe of pulmonary affection may take place from any ſudden, haſty and long-continued exertions†; juſtly obſerving, that, when obſtructions once form, the miſchief generally increaſes. In another place he thinks it may ariſe from "viſcidity of the blood from *coarſe*, *full*, and *foul* feeding." And upon this theory Mr. T. founds his method of cure. He adviſes to remove theſe obſtructions of the lungs by bleeding, and the mild purging balls, ſlightly impregnated with mercury. He then orders ſoap, gum ammoniac, &c. During this courſe of medicine he recommends "to be ſtrictly obſerved, that hay and water are to be diſpenſed with a ſparing hand, ſo as to prevent too great an accumulation in the ſtomach or inteſtines."

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* M. Vitet, p. 689, tom. ii. obſerves, "enfin on obſerve que la plupart ont les poumons trop volumineux reſpectivement aux cavité où ils ſont renfermés." May not this be from congeſtion of blood?

† That Mr. Taplin's conjectures may be right in ſome caſes cannot be doubted; but that theſe circumſtances do not conſtitute the general cauſes of the diſeaſe ſeems proved by the various phænomena of the diſeaſe, as well as by the diſſections of M. Vitet.

Indeed Mr. Taplin, Monſieur Vitet, and all thoſe converſant in the practice of farriery, have generally noticed that much water commonly oppreſſed the lungs, and aggravated their diſeaſes, particularly that diſeaſe now under conſideration.

They have, therefore, ordered drink to be given ſparingly*, maſhes to be left off gradually, and recommended a dry diet. The oppreſſion of breathing was ſelf-evident: it was a practical fact noticed by all; but, in my opinion, ſatisfactorily accounted for by none.

They have, in general, attributed it to the horizontal poſition of the animal, and the conſequent preſſure of a full ſtomach on the diaphragm: but, had they attended to another fact, that the animal will be often more oppreſſed ſome hours after drinking a quantity of liquid, when that liquid muſt have left the ſtomach, and got into the blood veſſels, they would have endeavoured to trace the affection to ſome other ſource. Mr. T. from the actual obſervation of the good effects of avoiding much liquid, obſerves, " For, whether as a preventive or cure, maſhes ſhould occaſionally be given, and gradually declined, till the food becomes regularly dry."

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* M. Vitet, p. 692, vol. ii. mentions, as one of his directions for the cure, "à faire boire le moins qu'il eſt poſſible."

M. Vitet (p. 693, tom. ii.) quotes a very ſtriking example of an accidental cure by abſtinence from liquids. His words are " Les marechaux ſont attentifs à faire boire les chevaux pouſſifs le moins qu'il eſt poſſible, étant fondés ſur une obſervation de *Soleyſel*, qui conſtate qu'un cheval pouſſif abandonné dans une grange à foin pendant ſix ſemaines ſans boire, fut parfaitement gueri de la pouſſe." I ſhall take the liberty to add another remarkable paſſage from the ſame author which evidently confirms the analogy which we think reſults from the hiſtory of both diſeaſes, and throws conſiderable light upon our notions of the aſthma.

Vol. 2d, page 689, when treating of "*difficulté de reſpirer ſans fievre*," (pouſſe, or ſhort-wind), amongſt a variety of different appearances of the lungs of the horſe, and of other animals ſubject to this diſeaſe, after death, he ſays "chez le plus grand nombre de ces animaux on voit les vaiſſeaux ſanguins des poumons, dilatés par beaucoup de ſang."

Therefore, reſpecting the cauſe of aſthma in the human ſubject, and that of the ſhort-wind in horſes, the analogy appears very ſtriking. A horſe, from hard exerciſe, becomes ſhort-winded: the human ſubject, from any ſevere ſtraining, running, or any other exertion, by which the blood is determined in very conſiderable quantity to the lungs, becomes aſthmatic.

In both, I conſider the diſeaſe ariſes from over-diſtention of the blood veſſels of the lungs. Nor does it leſſen the probability of this doctrine to know, that the miniſter's horſe, who is ſuppoſed to lead a very retired and eaſy life, alſo becomes ſhort-winded. For is it not as well known, that a lazy, inactive life, produces relaxation of the veſſels; and that the blood veſſels of the lungs poſſeſs the ſame ſtructure, and the ſame diſpoſition to relaxation, to a varicoſe or aneuriſmal ſtate, and conſequent congeſtion, as the blood veſſels in other parts of the body?

If, therefore, our analogy is well-founded, and the ſhort-wind in horſes be a diſeaſe ſimilar to, and ariſing from the ſame cauſe as, the aſthma in the human ſubject, the method of cure ſhould, of courſe, be the ſame: which is, firſt to empty the blood veſſels by active purgatives, allowing them ſcarcely any drink for ſeveral days, and by occaſional bleeding: and, laſtly, to reſtore their contractile power; for unleſs the proper tone is given to the over-diſtended veſſels, the diſeaſe will return and be continued. The beſt purgative, I ſhould conceive, would be a bolus compounded of the reſin of jalap, ſoap, and the unwaſhed calx of antimony, or ſome calomel. Reſpecting the other pulmonary diſeaſes of this, and the many other uſeful animals employed in the ſervice of man, it will appear probable, from the foregoing reaſoning and the ſimilar ſtructure of their lungs, that moderate drinking, as well as other parts of the above doctrine, will be equally uſeful to them, while they are indiſpoſed.

CHAP. IV.

General Remarks on Pulmonary Conſumption, with ſome Obſervations on Catarrh, and Croup; as alſo on the Seat, Origin, Formation, and Termination of Tubercle.

WE now come to ſay a few words on that moſt horrible of the pulmonary diſeaſes, the Pulmonary Conſumption: of which alſo, as already of hæmorrhage and aſthma, we do not mean to give a ſyſtematic account; but, adhering ſtrictly to our title, only beg leave to offer a few remarks.

With much propriety hath it been obſerved that man is an inconſiſtent creature, always fond of extremes. And in no inſtance is the obſervation more fully confirmed than in that of the different doctrines which have been delivered on pulmonary conſumption. For various and contradictory have been the opinions of authors on the nature of this diſeaſe, and as various have been their methods of cure. For while ſome have contended it was inflammatory, and purſued their bleedings even to the 50th or 60th time*; others have held a contrary opinion, declaring the pulmonary conſumption a putrid diſeaſe, and contending that the bark was the only remedy. Nor have their ſentiments been leſs diſcordant reſpecting the preciſe ſtate of the lungs which conſtitutes the diſeaſe. For while one endeavours to convince you that it conſiſts in ſcrophulous tubercles; another, with equal ingenuity, proves to you, that the genuine phthiſis cannot exiſt without ulceration of the lungs.

Yet it is well known that this diſeaſe appears in different forms, and takes origin from all the different circumſtances we have mentioned; and it has alſo been ſufficiently aſcertained that, although active inflammation may ſometimes exiſt, it does not always exiſt; and that, therefore, notwithſtanding blood-letting and the antiphlogiſtic regimen are often extremely proper, yet they are not always ſo: nor does the idea of putrefaction or debility appear ſo generally as to warrant an indiſcriminate uſe of the bark. But the practitioner who founds his practice upon the rational baſis of the anatomy, phyſiology, and pathology of the body, avoiding all extremes, and unbiaſſed by theory, will vary his plan of operations according to circumſtances; ſometimes uſing the lancet, and ſometimes the bark. And, by an attentive conſideration of theſe authors, he will find in every one of them ſome valuable facts, which he will adopt as circumſtances ſhall require.

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* Dr. Dover.

In theſe remarks, therefore, we ſhall endeavour to ſteer a middle courſe; and direct the attention of the reader to principles, which we hope are rational, and conſiſtent with the laws of the animal œconomy: by which we ſhall attempt to demonſtrate, that the hitherto declared *opprobrium medicorum*, the hitherto ſuppoſed incurable conſumption, may be attacked ſucceſsfully ſo as, in general, to bring about a cure, if early application is made. And although we have no famous balſam, no ſpecific remedy to propoſe, and no infallible cure for conſumption; yet, we ſhall endeavour to point out a certain plan of treatment, which, when properly adapted to the conſtitution of the patient, and the particular circumſtances of his caſe, will cure in the beginning, and give infinite relief in the advanced ſtages of the diſeaſe.

And although, reſpecting the nature of this diſeaſe, many doctrines have been delivered, yet one of the principles which we contend for, and which we have already ſucceſsfully adopted in the cure of the foregoing diſeaſes, has an advantage over every other kind of remedy; that, under whatever circumſtances the diſeaſe may appear, and upon whatever foundation you attempt a cure, it is not only ſafe, but abſolutely neceſſary in order that the plan of cure, whatever it may be, may have a fair chance of ſucceſs. This principle is the *limited uſe of liquids.*

Now we have before obſerved, that any part of the body, when diſeaſed, can only recover itſelf by the natural powers inherent in that part; and that, as no medicine, no application we know, can form the callus of a broken bone, ſo no particular medicine, we are acquainted with, can remove a tubercle or heal an ulcer of the lungs, if the natural powers of the parts do not exert themſelves on the occaſion.

But a broken limb has an advantage over diſeaſed lungs, in as much as the former can be placed and retained at perfect eaſe, while the natural offices of the latter keep them in perpetual motion; which motion all authors have conſidered as a great obſtacle to the cure. And indeed every practitioner knows that if this natural motion is by any means increaſed, or kept up, while they are affected by diſeaſe, the cure is thereby much impeded, if not entirely prevented.

For, in attempting the recovery of any great affection, either of the conſtitution in general, or of any particular part, both the body and the part muſt be, if poſſible, at reſt. For example, a man affected with a fever will recover ſooner, if kept quiet in bed, than if permitted to go abroad: and every body knows, that no man can be cured of a fracture, unleſs he allow the parts to be at reſt. Now I truſt thoſe principles which tend to place the lungs, when diſeaſed, in the ſame ſituation as to eaſe as a broken limb, when fractured, will be ſuppoſed the moſt rational in attempting the cure of pulmonary conſumption. For if the lungs are retained in the ſame eaſy quiet ſtate, as a broken leg, the powers of reſtoration will often, of themſelves, accompliſh a cure; in the way that the ſame powers bring about the union of a broken bone. To leſſen their continual motion, therefore, or to *keep the lungs as much as poſſible at eaſe*, muſt conſtitute one of our chief indications, in attempting the cure of pulmonary conſumption, from whatever cauſe it may ariſe.

As pulmonary conſumption is a general decay or waſting of the body, ariſing from ſome previous morbid affection of the lungs, we ſhall firſt endeavour to aſcertain wherein this morbid affection conſiſts, and upon this found our method of cure. And we will begin by tracing this terrible malady from its moſt early periods; from the incipient catarrh, which, when neglected, often becomes the fatal ſource of its direful termination.

Catarrh. This morbid affection, which is commonly known by the term *a cold*, and which has been denominated "a defluxion of ſharp ſerum from the glands about the head and throat," conſiſts in a conſiderable determination of blood to the mucous membrane which lines the fauces, the larynx, and trachea arteria, attended with more or leſs of inflammation, irritation, increaſed, and often changed ſecretion, and cough.

The chief exciting cauſe of this diſeaſe has been allowed by all phyſicians to be a check of perſpiration: and they have therefore employed, in order to remove it, all thoſe remedies which have been ſuppoſed efficacious in reſtoring and promoting this cutaneous diſcharge; among which they have ranked plentiful drinking or dilution as the chief. The cauſe cannot be denied: but how far the plan of cure, juſt mentioned, is either rational or ſucceſsful we ſhall now proceed to enquire.—Firſt let us ſee what will be the natural conſequences of this obſtructed perſpiration. When a check of perſpiration takes place ſo as to terminate in catarrh, the cutaneous veſſels are conſtricted, and a quantity of fluid, which ſhould have naturally paſſed off by the ſkin, is retained in the habit. To make up for this deficiency of perſpiration nature endeavours to rouſe the kidnies to exertion, and to increaſe the exhalation by the lungs: but, unfortunately, the pulmonary veſſels themſelves are often conſtricted, and the kidnies are not always faithful to their office; hence there is, in a ſhort time, a conſiderable increaſe of the circulating fluids; which, from the external conſtriction, are either detained in, or determined upon, the different viſcera and internal parts: and hence the lungs, as being entirely compoſed of veſſels, and being more expoſed than the reſt of the viſcera, become more or leſs oppreſſed; while the above-mentioned mucous membrane, as being expoſed to the air in reſpiration, and as ſharing in the general internal determination, becomes more and more irritable and inflamed; and, at the ſame time, its mucous ſecretion is more or leſs altered and increaſed, and is often ſo acrid as to irritate the ſurface extremely, producing perpetual cough. And if that portion of the ſame membrane which lines the noſe be affected in like manner, ſneezing will, in the ſame way, be produced.

The inflammation of this tracheal lining will aſſume different ſhapes, and will be more or leſs acute, according to the ſtate of the conſtitution in general, or the exiſting tone and activity of the arterial ſyſtem: and the ſtate of the ſecretion will entirely depend upon the ſtate of the irritability and inflammation, although it may be in ſome degree affected by the atmoſphere. In one ſtate of inflammation it will be more or leſs mucous; in another it will be thin and acrid; and, in another, there will be an exudation of coagulating lymph, which conſtitutes the moſt ſerious of theſe affections. By this exudation the diſeaſe, called croup, is produced;

duced; from it alſo, when it happens in the air cells, do we ſuppoſe that tubercles may ariſe.

As farther confirmation that the fluids exiſt in an increaſed quantity in catarrh, it has been found that blood, taken from the veins of patients labouring under this affection, has generally contained an unuſually large proportion of ſerum.

Doth not, therefore, the increaſed fulneſs of the veſſels, which we have above-mentioned, point out a contrary method of cure to that commonly made uſe of, viz. a ſpare uſe, inſtead of a plentiful uſe, of diluents? We think ſo: and that the following indications of cure naturally ariſe from what hath been ſaid, viz.

1ſt, To leſſen the quantity of the circulating fluids.

2dly, To reſtore the proper determination to the ſkin.

3dly, To leſſen the inflammation and irritability of the pulmonary ſyſtem in general, and of the internal mucous membrane in particular.

Theſe we ſhall briefly conſider in their order: but ſhall firſt notice, in a very few words, ſome of the uſual modes of treating this diſeaſe; from which the reader will be better able to judge of the different methods of treatment. When a perſon gets a ſevere catarrhous affection, he is immediately adviſed to keep in a warm room, and to drink plentifully of warm diluting liquors: and if a plentiful perſpiration is procured in this way, the veſſels become thereby leſs full, and the general determination to the ſurface allows the inflammation and irritability of the affected membrane to go off, and thus is a cure ſometimes obtained. But this method of treatment is liable to ſome objections. For a patient, treated in this way, is not only frequently weakened by ſuch copious dilution with hot liquids; but, from the increaſe of perſpiration, thereby occaſioned, is ſubject to a relapſe on the leaſt expoſure to cool air; from which he perhaps get a freſh cold the moment he leaves his chamber, and indeed often to an alarming degree.

Ladies of delicate frames ſuffer particularly from this kind of treatment, and the conſequent increaſed diſpoſition to relapſe. If, therefore, the firſt indication of cure above-mentioned is proper, the great dilution uſually adopted, as being quite contrary to that indication, muſt be improper; as, by it, the veſſels, inſtead of being emptied, are filled fuller, unleſs counterbalanced by conſiderable evacuations; and the pulmonary ſyſtem becomes thereby much oppreſſed.

All the patients which I have attended, for ſome time paſt, have been treated agreeable to the three above-mentioned indications of cure, which are now to be conſidered; and they have, in general, ſpeedily recovered.

In fulfilling, therefore, the firſt indication, the reader will recollect that the quantity of the circulating fluids may be leſſened in two ways, viz. by diminiſhing the quantity of liquids taken into the body, and by increaſing the different ſecretions. And he will adopt either the one or the other of theſe methods, according to circumſtances; and, on many occaſions, both of them will be worthy of his attention.

When ſpeaking of hæmorrhage, we have there fully pointed out the good effects of moderate drinking and purging in diminiſhing the fulneſs and over-diſtention of the vaſcular ſyſtem; we have found them equally uſeful in the treatment of catarrh, and of incipient pulmonary affection. The reader will, however, perceive, that the plan of drinking little in this diſeaſe is contrary to the uſual practice, which, as we have already remarked, conſtantly enjoins to drink plentifully of warm diluting liquors.

But, although the irritable fauces are much comforted by the frequent paſſage of ſoft warm liquids, yet, when much of them is taken, the patient will feel his breathing oppreſſed, from the pulmonary veſſels being over-filled; and, if this plan is continued for ſeveral days, the conſtitution becomes, in general, relaxed; and, even although a cure ſhould be thereby accompliſhed, (which is not always the caſe) the patient becomes much more liable to a relapſe.

Whereas, if a cure is obtained by evacuations, and a proper regulation, and limited uſe, of liquids, the veſſels will become ſufficiently empty, while the proper action of the ſkin will naturally take place, without leaving that irritability of the body, and openneſs of the pores, (if I may be allowed the expreſſion) which diſpoſe to a relapſe. The quantity of liquids, which I have found generally to anſwer beſt with my catarrhal patients, has hitherto been about a pint, or a pint and an half in the twenty-four hours; and the moſt grateful and beſt adapted liquid is the almond emulſion, which poſſeſſes ſome nouriſhing as well as demulcent properties.

On ſome occaſions, I have adviſed about half a pint of ſome ſoft weak liquid to be taken at night, when in bed, a little warm: which has been ſufficient to promote the proper temporary relaxation of the vaſcular ſyſtem, and determination to the ſurface of the body, without inducing that permanent weakneſs and diſpoſition to relapſe, commonly produced by the great quantity of warm diluents uſually employed. And indeed the common drink may be tepid, but not hot; and never in great quantity, which always, more or leſs, embarraſſes the pulmonary ſyſtem. We have already, when treating on hæmorrhagy, had occaſion to notice the good effects of purging in emptying the vaſcular ſyſtem, and in determining from the lungs: and wherever the veſſels are full, and emptying is indicated, as is the caſe in catarrh, according to our notions, I never allow my patients above half a pint of liquid during the operation of the purge; for it appears a very inconſiſtent practice, when you wiſh to empty the veſſels by purging, to pour into the ſtomach much more liquid than the quantity carried off by the phyſic.

The purgative may be given every other morning, for two or three times; but which, like every other medicine or plan of cure, muſt be regulated according to circumſtances. The cathartic medicines, preferable in this diſeaſe, ſeem to be thoſe which will reſiſt inflammation, and carry off moſt of the ſuperfluous water from the blood; ſuch as thoſe compoſed of magneſia vitriolata, radix jalapii, &c. &c.

We now come to the *ſecond indication* of cure; which is, to reſtore the proper action of the ſkin: but we might rather ſay, allow it to take place; as, when the veſſels are ſufficiently empty, the natural perſpiration will, in general, proceed as uſual. Practitioners, forgetting ſome of the conſequences of the firſt conſtriction of the ſkin, viz. the fulneſs of the veſſels, &c. have, therefore, in endeavouring to remove it, paid no attention to remove this fulneſs, otherwiſe they would not have attempted the removal by adding to it by their plentiful dilution.

Indeed the cure by increaſed perſpiration is of all others the moſt uncertain in this changeable climate, and renders the patient very liable to a relapſe, as we have before mentioned. And all heating medicines and drinks, given with this view, as increaſing and keeping up the inflammation of the affected membrane, and as increaſing the diſpoſition to the phlogiſtic diatheſis, which often exiſts in this diſeaſe, are hurtful: whereas a cooling regimen, and the ſaline antimonial, and ſedative medicines, not only tend to remove the phlogiſtic diatheſis, and relax ſufficiently the vaſcular ſyſtem, but alſo to reſtore the natural cutaneous diſcharge, without that danger of relapſe attendant on the uſe of the warm diluting regimen. And, during the above and following treatment, there is no neceſſity of confinement or nurſing in a warm room, from which the inflammation and irritability of the affected membrane will be rather increaſed and ſupported: but, on the contrary, the patient is adviſed, either to remain in a room of very moderate temperature, or to go out when the weather will permit; from which the cure is accelerated, and the probability of a relapſe rendered leſs.

Reſpecting the air, it is of much conſequence to regulate its temperature according to the ſtate of the diſeaſe. In the earlier and middle ſtates, a moderate temperature, inclining to warm, will be the beſt; as the blood will be thereby ſolicited to the ſurface of the body, and the irritability of the mucous membrane will be thereby diminiſhed: whereas a cold conſtricting air would increaſe the cauſes of the diſeaſe, as would likewiſe a too high temperature.

Hydrogen (inflammable) air, in a certain proportion, might alſo be uſeful from its ſedative properties. In the latter part of the treatment, when the veſſels have been ſufficiently emptied, and the feveriſhneſs, if any exiſted, is removed; a moderately cool, dry, and pure air, by giving energy to the pulmonary ſyſtem, as well as to the whole body, will tend to the recovery of the patient.

The moſt effectual medicine we know for promoting the natural cutaneous diſcharge, and which will alſo aſſiſt in fulfilling the third indication, is the ſedative antimonial draught recommended when ſpeaking of hæmorrhagy; only that, when I have uſed it for catarrh, I have, in general, increaſed the quantity of the antimonial wine *ad vomitum uſque*; after which I have, generally, found the patient recover very faſt. This ſaline antimonial draught I have commonly given every four, ſix, or eight hours, according to the urgency of the ſymptoms, in the intervals of purging; and with the wiſhed-for ſucceſs.

The *third indication* of cure requires our next conſideration: and the attentive practitioner will perceive, that all the various means mentioned, when ſpeaking of the two former indications, are equally applicable in the preſent; as tending to diminiſh the internal determination, irritation and inflammation, as well as to reſtore regularity to the natural functions. The mild opiate or narcotic in the antimonial draught will here be of great uſe, in taking off the irritability of the parts affected, and may be increaſed according to circumſtances. Indeed, after the veſſels have been ſufficiently emptied, and the diſpoſition to the phlogiſtic diatheſis removed, the remaining irritability of the mucous membrane, and attendant cough, may often be removed in one night by adding to the night draught ſome drops of the tinctura opii, and removing the patient next day into a dry and moderately cool air. Thus will the increaſed ſecretion be diminiſhed; and, loſing its irritating properties, by which the cough is kept up, it will return to its natural bland and mucous ſtate; and thus will the diſeaſe diſappear. I have ſaid nothing of blood-letting, which, although not often required, may, notwithſtanding, be neceſſary on ſome occaſions. In an incipient, or recent catarrh, Mr. Mudge has ſtrenuouſly recommended the inhalation of the vapour of warm water: and it may, without doubt, be uſeful on ſome occaſions; although, if the plan of cure, above recommended, be properly purſued, it will generally be found unneceſſary. When I have thought this local application adviſeable I have found more advantage from a warm decoction of the white poppy-heads, or from an infuſion of the cicuta, than from pure warm water: which might readily be imagined, as ſome volatile ſedative property will be conveyed to the parts affected together with the vapour.

Vomiting is alſo of great advantage in every ſtage of this diſeaſe.

Having briefly noticed this catarrhal affection of the larynx and trachea, we are naturally led to another, viz. the diſeaſe commonly called the croup: a diſeaſe of the moſt dangerous nature, and which often, by a very rapid progreſs, goes on to a moſt fatal termination.

On the Croup.

That the croup[*], when attended with that membranous or pulpy ſubſtance, ſufficiently deſcribed by authors[†], is a diſeaſe ariſing from active inflammation of the internal mucous membrane which lines the larynx, the trachea arteria and its branches, and of a very oppoſite nature to the ſpaſmodic affection which, as reſembling the croup in ſome of its ſymptoms, has been often miſtaken for it, has been now fully aſcertained. And, if we conſider that the one is a diſeaſe of high inflammation, and the other of conſiderable debility, it will appear evident that the medicines which do good in the one caſe will do manifeſt injury in the other; and that it will, therefore, be of infinite importance to make the proper diſtinction. But that the croup, attended with high inflammation, and conſequent exudation is by far the moſt common in this country, is now, I believe, generally allowed. It will therefore follow, that all medicines of a ſtimulating nature, which increaſe active inflammation in general, will be here highly improper and tend to keep up the diſeaſe. And that, therefore, the ſtimulating antiſpaſmodics, which may be occaſionally proper in a ſpaſmodic affection of the larynx or trachea, will alſo help to increaſe this internal inflammation. The antiphlogiſtic plan of cure, which is now commonly practiſed, is that which I have ſeen the moſt ſucceſsful in this active ſtate of the diſeaſe. In uſing topical bleeding, I prefer ſix or eight ſmall leeches, to three or four in proportion larger; becauſe the former, while they occaſion as much evacuation of blood as the latter, will leave three or four additional points of external determination: and, as this determination ſhould be increaſed and kept up as much as poſſible, I endeavour to promote it by applying a bliſter immediately after the bleeding, which I allow to remain, if neceſſary, until a certain degree of ulceration takes place. But, in the early ſtate of the diſeaſe, I have generally found that the emetic tartar, given ſo as to produce ſevere and ſpeedy vomiting, has immediately ſtopped the diſeaſe.

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[*] Cynanche Trachealis Culleni.

[†] Vide Dr. Baillie's Morbid Anatomy, Dr. Home, &c.

A few days ago, I gave a ſolution, containing half a grain of the emetic tartar in each doſe, every ten minutes, to a child about a year old, until it produced conſiderable vomiting:

and the croup was, by this emetic and a ſaline antimonial mixture, entirely removed in twenty-four hours. It may be worthy of obſervation, that all the children of this ſamily, conſiſting of ſeveral ſons and daughters, born of robuſt and healthy parents, were ſubject to inflammatory diſeaſes, particularly pleuriſy and croup. And, ſome years paſt one child died of the croup, although attended by a very eminent phyſician: but, it ſhould alſo be obſerved, that the diſeaſe had exiſted for three days before any aſſiſtance was called.

Reſpecting the internal exudation generally found in croup, phyſicians ſpeak of it as an inorganic, membranous or pulpy ſubſtance. Now diſſection has demonſtrated, that exudation of coagulating lymph is one of the effects or terminations of active inflammation in other parts of the body; and that, by this lymph, a vaſcular connection between the part affected and the neighbouring parts is frequently formed. And it is alſo believed that the exudation found in croup is formed of the ſame coagulating lymph which is found on other inflamed ſurfaces, only with the addition of a certain proportion of mucus, which, in the early ſtage of the inflammation, is ſecreted in an increaſed quantity. This exudation appears more pulpy, as being mixed with mucus as well as exuded coagulating lymph; but ſeems to poſſeſs the ſame property of uniting itſelf to the ſurface upon which it is exuded. And although, from being ſituated in a cavity where air is alternately paſſing in and out, it may, in general, adhere more looſely to the inflamed ſurface than other exudations differently circumſtanced; yet that, like them, it may alſo become vaſcular, I had two very particular demonſtrations, which I ſhall now mention.

CASE I.

In the year 1788, I was requeſted to viſit a child, between two and three years of age, who had laboured under the croup for the four preceding days. As the diſeaſe was well marked, I informed the parents of the great danger the child was in, and expreſſed my ſorrow that it had been allowed to proceed thus far without any medical aſſiſtance. I immediately ſent a ſtrong ſolution of the emetic tartar, to be given *gradatim* until it produced plentiful vomiting; intending afterwards to apply bliſters, and uſe other means for the recovery of the patient.

The emetic anſwered very well: but, in the action of vomiting, the adventitious membrane or ſubſtance was ſeparated, and ſoon after brought into the mouth. The mother attempted to remove it; but was unſucceſsful. It was drawn back into the throat; and, a portion of it ſhutting up the aperture of the larynx, the child was thereby ſuffocated.

Soon after the child's death the membranous ſubſtance was perceived, and having been removed, was deſtroyed; ſo that I never ſaw it. But having obtained permiſſion juſt to look at the inſide of the larynx and trachea, I found a raw tender ſurface, upon which appeared different ſpots of blood, like as when the dura mater is torn from a freſh cranium. Theſe appearances ſeemed to me to point out a connection by means of veſſels; and which is evidently confirmed by the following caſe.

CASE II.

In November, 1791, the niece of Mrs. Day, who now lives in this neighbourhood, a young woman about eighteen years of age, while under the ſmall pox, was, on the third day of the eruption, ſuddenly ſeized with the croup. This circumſtance was mentioned, on the ſame day, to the practitioner who attended her: who being, as I preſume, unacquainted with the nature of the diſeaſe, told her aunt that ſhe had only a common cold which was of no conſequence. That he really thought ſo was evident, as he preſcribed nothing for her, and did not viſit her again until after I had been called to her in the act of ſuffocation from this new-acquired diſeaſe.

I ſaw this young woman late in the evening, on the ſixth day of the eruption, when I found her ſitting up in her bed, almoſt black in the face, and nearly in a ſtate of ſuffocation. I was informed, that ſhe had been three days affected with what evidently appeared, from the deſcription of the ſymptoms, to be the croup; and that her breathing had been extremely difficult for the greateſt part of that day; during which time ſhe was only able, on account of her breathing, to ſwallow a tea-ſpoonful of liquid at a time. While ſhe was exerting herſelf in endeavouring to ſpeak to me, ſhe brought up a large portion of the adventitious pulpy ſubſtance above mentioned, in one piece, which was about two inches long; and was thereby much relieved. Notwithſtanding, I ſent her an emetic draught, compoſed of emetic tartar and ipecacuanha wine, which operated very well; and brought up a conſiderable quantity of the ſame ſubſtance, in detached pieces. After this, ſhe became greatly better, and could breath with eaſe, although very hoarſe. One ſurface of the largeſt portion of this adventitious ſubſtance, which was evidently that next to the larynx and trachea, was ſtudded with bloody ſpecks, ſimilar to thoſe mentioned in the firſt caſe; ſo that there appeared clearly to have been a continuation of veſſels between the internal ſurface of the larynx and trachea, and the adventitious ſubſtance formed in conſequence of the inflammation.

Do not theſe appearances confirm the active nature of this inflammation, and alſo direct us to ſtudiouſly avoid all warm ſtimulating medicines in this diſeaſe? The aſafœtida, having been found occaſionally of advantage in the ſpaſmodic *ſuffocatio ſtridula*, has been alſo recommended by ſome practitioners, in every ſtate of this diſeaſe, without diſcrimination; and even when attended with the moſt active inflammation. But it will, in general, be found, that, even in the ſpaſmodic ſtate of this diſeaſe, if the aſafœtida does not occaſion vomiting, or ſome other evacuation, it will by no means produce thoſe antiſpaſmodic effects generally expected from it. Dr. Home obſerves *, when ſpeaking of aſafœtida, "as it heats and quickens the pulſe, "it muſt always be improper in inflammatory "caſes." This young woman remained hoarſe for five or ſix days; during which time ſhe coughed occaſionally, and therefore took ſome paregoric and gentle diaphoretic medicines. The ſmall pox proceeded as uſual, and ſhe got perfectly well.

On the Seat, Origin, Formation, and Termination of Tubercle.

From what has been ſaid on catarrh and croup, it will be readily perceived that, when either of theſe diſeaſes, both of which conſiſt in certain inflammatory affections of the internal lining of the larynx, trachea, and bronchia, is neglected, the inflammation may at laſt extend to the lungs themſelves, and give riſe to the affections we are now to conſider, which often terminate in the pulmonary conſumption.

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* Vide Clinical Experiments.

Therefore, from the trachea arteria, and its branches, the bronchia, we naturally come to the morbid affections of the air cells, which conſtitute the ultimate terminations of theſe branches, where the fatal ſource of pulmonary conſumption often commences.

Practitioners have generally mentioned two morbid ſtates of the lungs which they have conſidered as chiefly giving riſe to pulmonary conſumption, viz. tubercle and ulceration. The former, as it conſtitutes that affection of the air cells we have juſt mentioned, we ſhall firſt endeavour to inveſtigate; and afterwards proceed to ſay a few words on ulceration: a very common conſequence, or termination, of tubercle.

Tubercle, therefore, is a circumſcribed, and generally hard body, bearing ſome analogy to an abſorbent gland; and ſometimes many of them, of different ſizes, viz. from the ſmalleſt particle to near an inch in diameter, will be found more or leſs diſperſed throughout the lungs of conſumptive patients *. But it may be proper to obſerve, that, although this is the more common appearance, yet it will be ſeen hereafter that they may get to almoſt any ſize from extended exudation, adheſion, &c. &c.

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* This account of the ſize of tubercle agrees with that given by Dr. Stark; who, when ſpeaking of their cavities, obſerves, that they are "from the ſmalleſt perceptible, to "half an inch, or three quarters of an inch, in diameter."

As the nature of theſe ſeemingly glandular bodies is acknowledged by the moſt reſpectable authors* to be but little underſtood, I ſhall, with every due ſubmiſſion, beg leave tó offer a few obſervations on their origin and formation; as well as reſpecting their ſituation, which appears to me to be erroneouſly ſtated even by the beſt authors who have written on this diſeaſe.

As the phthiſis pulmonalis happens moſt frequently to ſcrophulous conſtitutions, and tubercles have generally been found in the lungs of thoſe patients, reſembling the ſcrophulous abſorbent glands in other parts of the body, they have concluded that theſe tubercles were morbid enlargements of ſome little almoſt inviſible glands, which they have deſcribed as exiſting in the connecting cellular membrane of the lungs, and which they have ſaid opened at laſt into the bronchia.

Now as theſe glandular bodies have never yet been ſeen in the natural healthy ſtate of the parts, we have, therefore, no reaſon to ſuppoſe that any ſuch exiſt; nor is their exiſtence neceſſary in order to account for the formation of tubercle; which we will endeavour to prove to be a diſeaſe ariſing in the air cells, and not in the cellular connecting membrane, as has been commonly ſuppoſed. We have already ſaid, that the different bronchia terminated, each in a particular cellular termination, conſiſting of a number of minute cells communicating with one another; but which we believe to be a diſtinct aërial apparatus, and to have no communication with the common cellular membrane *.

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* Dr. Simmons, &c.

Now into theſe cells, as well as into the whole internal ſurface of the bronchia, is ſecreted more or leſs of mucous for their defence; which is liable to many alterations, according to the ſtate of the atmoſphere, or of the ſecreting ſurface.

In ſome particular ſtates of atmoſphere and ſurface, this ſoft lubricating mucus will become thickened, and adhere ſo firmly as to be brought up with the greateſt difficulty.

Now, we truſt it will not be thought improbable to ſuppoſe, that a particle of this inſpiſſated mucus, ſtagnating in one of theſe minute

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* Vide page 4.

air cells, may give riſe to tubercle: and, as, in an inflamed ſtate of this internal ſurface, there will often happen an exudation of coagulating lymph, which is well known to adhere frequently with firmneſs to the ſurface where it is exuded, we may alſo conceive that ſome particles of this coagulating lymph, lodging in the air cells, may likewiſe become the nuclei of tubercles. That tubercles generally ariſe in the air cells ſeems farther confirmed by the obſervations of the very reſpectable and learned Dr. Simmons*: his words are, "and it is not unuſual for millers, "ſtone-cutters, and others, to die conſumptive, "from their being ſo conſtantly expoſed to duſt, "which in theſe caſes probably acts by pro-"ducing ſimilar concretions (viz. tubercles). "I have ſeen two inſtances of this ſort in mil-"lers;" and Dr. Kirkland obſerves, "that "ſcythe-grinders are ſubject to a diſeaſe of the "lungs, from particles of ſand mixing with iron "duſt, which among themſelves they call the "grinder's rot. Many inſtances in this way may "be met with in Ramazzini, Morgagni, and other "writers." Here it is evident that theſe extra-

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[*] Vide Practical Obſervations on the Treatment of Conſumptions.

neous ſubſtances were drawn into the air cells by inſpiration, and *there* (and not in the connecting cellular membrane) gave riſe to the tubercles which deſtroyed the patients and were found in their lungs after death: and had each tubercle been as large as to have included the whole of the air cells, up to the bronchial branch to which the cellular termination was attached, they would have put on the ſame appearance as thoſe deſcribed by Dr. Stark, as we ſhall hereafter mention. Do not the circumſtances which attended the experiment on the dog, as mentioned by Dr. Saunders [*], give additional ſupport to this opinion? His words are "Two "drachms of crude mercury were injected into "the crural vein of a dog: after a ſhort time, "he became feveriſh, with dyſpnœa, cough, and "daily increaſing ſymptoms of diſeaſed lungs, "of which he died. His lungs were found full "of tubercles, each of which contained a glo- "bule of mercury, forming, as it were, its nu- "cleus." For I preſume it will be readily believed that the mercury was ſecreted into the different cellular terminations of the bronchia, and that, being there confined, its particles became the nuclei of different tubercles, as by him related. And had it been ſecreted into the common cellular membrane, would it not, by its ſpecific gravity, have all fallen to the moſt depending parts of the lungs; and there formed only one, or two tubercles, inſtead of the many which were ſaid to have been produced, and which we preſume were not confined to any particular depending parts of the lungs, as no mention is made of that circumſtance?

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[*] Vide Treatiſe on the Liver, p. 302.

From the account of tubercle given by the late ingenious Dr. Stark, it appears that he was of opinion, that tubercle originated in the connecting cellular membrane, and that it had no communication with the air cells or bronchia until it had gotten to a certain ſize: but his own words ſeem to me to prove, that the chief ſeat of tubercle is in the air cells, agreeable to our notions. For he obſerves that, when tubercles have arrived at a ſize exceeding half an inch, they "have conſtantly a round opening made by a branch of the trachea."

Now, how could this conſtantly happen if tubercles originated, as is commonly ſuppoſed, in the lateral connecting cellular ſtructure? Are not the air cells the ultimate terminations of the tracheal or bronchial branches? They certainly are: and it hence appears evident that our opinion receives additional confirmation from this pathological fact. It may be ſaid that tubercle, according to our ideas of its formation, may alſo ariſe in the common cellular membrane. It certainly may, as well as the different ſcrophulous tumours which happen in the common cellular membrane of other parts of the body: but it muſt be granted that it will be much more apt to happen, and more eaſily produced, in a part where mucus is ſecreted, and where ſolid and heavy ſubſtances may by inhalation be received and become nuclei, than where there is only the fine interſticial vapour.

Suppoſing then our ideas, reſpecting the ſeat and origin of tubercle, to be well founded; let us next ſee how we can account for the formation and appearances of this apparently glandular body.

If a particle of thickened mucus, of coagulating lymph, or of ſome heavy extraneous body, ſhould ſtagnate in the air cells, what will naturally follow? Firſt, we preſume there will be more or leſs of irritation, and conſequent increaſed ſecretion of mucus, or exudation of lymph; from which the original particle, whether mucus, coagulating lymph, or extraneous ſubſtance, will receive an additional covering, together with, perhaps, adheſion of one or more of the air cells; from which, additional irritation, ſecretion, and ſtill farther addition and adheſion will take place; until at laſt this enlargement ſo irritates and ſo interferes with the œconomy of the lungs, as to produce inflammation and perhaps ulceration and hæmorrhage.

When the exudation or ſtagnation, which conſtitutes the tubercular nucleus, happens, there will be naturally abſorption, or exhalation, of the thinner parts, and the tubercle will be formed of a ſubſtance compoſed of mucus, lymph and air cells or extraneous ſubſtance, alternately, and almoſt intimately united: and as we know that the coagulating lymph unites parts, we can eaſily conceive that the air cells will be, by this intervening ſubſtance, firmly united, ſo that the whole will form the little tumour called tubercle. Yet we have every reaſon to believe that the particular veſſels of the air cells are only included, and not firmly united, with the tubercular maſs; for, from different changes which diſſection points out to have taken place in ſome tubercles, it would appear probable that ſome vaſcular action continued to be occaſionally exerted within them. But there may perhaps be another ſort of tubercle, of a ſolid, hard, and an inorganiſed ſubſtance; but which, moſt likely, is formed in the way which we have juſt mentioned, and which would differ from the former in as much as there would be a complete obliteration of every cell and veſſel. That ſome tubercles are organiſed, there can be no doubt from the circumſtances already pointed out: but if there are others inorganiſed, they may then form two diſtinct ſpecies, of which the latter may be more compact in its ſtructure, when cut into; and may therefore bear more reſemblance to an abſorbent gland than the former, in which ſome interſtices may be perceived when ſubmitted to this mode of examination.

Tubercles have been found of different colours, ſome appearing of a white, and others of a brown, colour. Now may not this variation of colour be merely accidental, and depend upon the nature of the ſecretion, or exudation; or perhaps be owing to a little blood, or to ſomething inhaled into the lungs at the time of the ſtagnation or formation of the tubercular nucleus? Some tubercles contain fluids of different kinds, as pus, a watery fluid, &c. &c. theſe fluids muſt be ſecreted or exuded. Is not this a proof of arterial connection, either by veſſels carrying red blood, or by lymphatic arteries? We alſo often find ulcerated little orifices, which we preſume are the efforts of nature to get rid of the contained fluid; and which will, I doubt not, now be allowed to be from the action of the abſorbing veſſels. Dr. Stark obſerves that there are no veſſels to be ſeen in tubercles, even when examined with a microſcope, after injecting the pulmonary artery and vein: but, with all due deference to this ingenious author, I am of opinion that he ought to have endeavoured to diſcover their vaſcularity, not by injecting the pulmonary artery and vein, but by injecting the bronchial arteries, which, as being the proper blood veſſels of the bronchia and air cells, muſt certainly communicate more or leſs with tubercle. For, as we have already obſerved, the chief buſineſs of the pulmonary arteries and veins, is for the expoſition, of the blood in the lungs, and for tranſmitting it from the right to the left ſide of the heart; whereas that of the bronchial veſſels is for the nouriſhment and ſupport of the whole pulmonary ſyſtem, including even the veſſels of expoſition and tranſmiſſion. So that although no vaſcularity appeared in tubercle on injecting the pulmonary artery and vein, we muſt not therefore conclude that tubercle has no veſſels: for the pulmonary artery and veins, as being only for performing the functions above mentioned, have no communication with tubercle whether it be ſeated in the connecting cellular membrane or in the air cells.

Had Dr. Stark, therefore, injected the bronchial veſſels with fine injection, he would have, without doubt, diſcovered vaſcularity in ſome tubercles; although, as we have already noticed, there may, perhaps, be ſome wholly without veſſels paſſing into their ſubſtance.

Whether the orifices of the abſorbents of tubercle, which are the chief agents of ulceration, be large enough to admit mercury, in the way that the abſorbents are every now and then filled, by plunging a tube filled with mercury into an abſorbent gland, I am not able to determine: although I ſhall take the firſt opportunity of inveſtigating that circumſtance. But whether they are, or not, the different changes which take place in tubercle ſufficiently ſhew their exiſtence.

Hitherto I have endeavoured to give a general idea of the ſeat, origin and formation of tubercle: but, for a more minute account of their progreſs, and the various circumſtances or changes which take place in them, together with the different other appearances they aſſume, I beg leave to refer the reader to the following pathological authors, viz. Morgagni, Dr. Stark, my learned and ingenious friend Dr. Baillie and others; while I go on to offer a few remarks on their more common termination, viz. in inflammation, abſceſs, and ulceration. But it may not be altogether uſeleſs firſt to inquire what relation exiſts between tubercle and ſcrophula, and whether the former be really a ſcrophulous diſeaſe, as is generally imagined. As tubercles bear very ſtrong analogy to the abſorbent glands, whenever the latter have been diſeaſed, and the lungs at the ſame time affected, practitioners have ſaid that the ſame diſeaſe exiſted in the lungs, and that their abſorbent glands were alſo enlarged: although it is well known that no abſorbent glands exiſt in the ſubſtance of the lungs. Now we have already endeavoured to convince the reader that, whatever analogy tubercles may bear to abſorbent glands, which are the chief ſeat of ſcrophula, they are notwithſtanding very different ſubſtances: therefore, although ſcrophula may exiſt in the body, and the whole abſorbent glands be thereby affected, it is ſtill no certain proof that tubercles, found in the lungs of theſe patients, are the ſame diſeaſe. But, as it muſt ſtill be acknowledged that tubercles and conſumption more frequently occur in ſcrophulous conſtitutions than in any other, we ſhall now endeavour to aſcertain how this happens.

In the firſt place it is generally agreed that the ſcrophulous conſtitution is a weak one; and perhaps debility alone, or laxity of the vaſcular ſyſtems, will account for all the phenomena of ſcrophula: for from this cauſe may ariſe diminiſhed abſorption, and a too languid circulation from want of a ſufficient power in the veſſels to propel forward their contents; from which ſtagnation in the ſmaller veſſels in the glands, in the air cells, and other internal ſurfaces, may ultimately take place; and thus produce all the appearances commonly called ſcrophulous. It will alſo be found, that in all weak conſtitutions the mucous ſecretions are more abundant than in the ſtronger ones: it therefore follows that, as the internal ſurface of the aërial ſyſtem is a mucous ſecreting ſurface, and as there will be more of that ſecretion in a ſcrophulous patient than in any other, ſtagnation in the air cells, and the other circumſtances which give riſe to tubercle, are more likely to happen to them than to other more robuſt habits, where leſs of this mucus is ſecreted. It may alſo be obſerved that conſumption may be more apt to happen in ſcrophulous conſtitutions, as in them the commencement is inſidious; and ſteals on by ſuch ſlow and imperceptible degrees, that the diſeaſe has often arrived at a very advanced ſtate before you are aware.

That the mucous ſecretions are much increaſed in weak conſtitutions muſt be evident to every practitioner who has attended to the great quantities of ſlime or mucus which is in general diſcharged from the bowels of weak, rickety, or ſcrophulous children; and where the other mucous diſcharges, as from the noſe, the lungs, &c. are alſo in conſiderable quantity. And this diſpoſition to increaſed ſecretion of mucus will often continue to the moſt advanced age: hence ſome people have a great and conſtant diſcharge of this kind from the lungs, which often accompanies them through life, and frequently terminates, at laſt, in pulmonary conſumption. For when this ſecretion is not carried off by expectoration, ſtagnation, and conſequent miſchief will follow: and it will be generally found, as we have juſt now obſerved, that theſe people will die conſumptive, unleſs they are ſpeedily carried off by ſudden death, or ſome acute diſeaſe.

If, therefore, our notions of the nature of tubercle are well founded, it will appear probable, that tubercles have no farther connection with ſcrophula than that, from the circumſtances above mentioned, they are more likely to be produced in a ſcrophulous patient than in any other: and a very reſpectable and ingenious author has obſerved, "I am fully of opinion, that at leaſt nine in ten of thoſe who die of conſumption are ſcrophulous ſubjects*."

On Inflammation, Suppuration, and Ulceration of Tubercle.

When a tubercle has acquired a certain ſize, it begins to diſturb the natural offices of the lungs. The blood is prevented or impeded in its paſſage through that portion of them, and reſpiration is more or leſs embarraſſed.

Mr. Mudge, in his treatiſe on the catarrhous cough, p. 45, obſerves, when ſpeaking of tubercles, "for by obſtructing the regular circulation of the blood through the ſmall, and indeed ſometimes larger branches of the pulmonary veſſels, they produce a diſtention of their ſides, which by this means becoming thin and weak, frequently burſt during the violent exertions of the cough; the conſequence of which is an hæmorrhage, always alarming, and ſometimes fatal." But ſuppoſing this hæmorrhage does not take place, yet the whole pulmonary ſyſtem will become irritated, and particularly the part or parts affected: hence will ariſe a ſevere cough, and by and by inflammation will be produced, which, if not early attended to, will often terminate in an abſceſs, which may ſoon occaſion ulceration, and all its dreadful conſequences. The tubercular inflammation, which every now and then is confined to the tubercle itſelf, and always includes it, will often ſo affect the neighbouring parts as to form that diſeaſe of very conſiderable extent which is particularly deſcribed by Dr. Baillie*. For according to the nature of the ſtagnation, the irritation and extent of the conſequent ſecretion or exudation, will either tubercles be formed or this more extended diſeaſe. In the organiſed tubercle, when the inflammation is confined to the tubercle itſelf, and matter has been formed in it, ulceration generally takes place, producing one or more openings by which the matter is poured into the bronchia, by the natural motion of the lungs, from whence it is expectorated. And when this communication with the cavity of the bronchial branch, is once formed, the air received into the lungs by inſpiration will have more or leſs of acceſs to the internal ſurface of this tubercular abſceſs, and often occaſion additional irritation and cough. On opening into theſe abſceſſes, their internal ſurface is in general an unequal, ulcerated ſurface, although, every now and then, it is lined with a ſmooth membranous cyſt.

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* Dr. Hamilton's Obſ. on Scrophulous Affections, p. 27.

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* Morbid Anatomy, p. 49.

The termination of tubercle in ulceration, and which is the moſt dangerous, is now generally allowed to be the work of the abſorbing veſſels; and is conſidered as nature's effort either to remove, or get out of the way of, an irritating ſubſtance; for whatever irritates a part to a certain degree, excites to this kind of action of the abſorbing veſſels. Whenever, therefore, a certain irritation from tubercle takes place, either the ſurrounding abſorbents, or thoſe in the tubercle itſelf, are thereby ſtimulated, and ſet to work to remove the irritating body; either by the complete abſorption or removal of the whole of it, or by endeavouring to get out of its way by ulceration, which is alſo accompliſhed by the ſame veſſels. Theſe circumſtances clearly point out the two different actions of the abſorbing veſſels, viz. the one complete abſorption, or abſorption without ulceration; and the other abſorption, with ulceration. May not the former be an increaſed exertion of their natural healthful functions; and the latter, an angry action, which they never adopt but when obliged?

For it is obſervable that whatever teazes them excites to this kind of action, as poiſons, too great friction, &c. And perhaps this irritable action of the abſorbing veſſels in carrying on ulceration may be kept up by an acrid ſecretion from the blood veſſels. Or does the matter, or ichor produced, and the ulceration depend upon a certain weakneſs or morbid irritability of both the ſanguiferous and abſorbing ſyſtems? It may be queſtioned, whether the two different actions of the abſorbing veſſels juſt mentioned depend upon different ſtates of the veſſels themſelves, or upon the diverſity of ſtimulus impreſſed by the different ſtimulating or irritating cauſes. We ſuſpect the latter: and conceive that one kind of ſtimulus excites to healthy vigorous action; while another excites to a more feeble, irritable, or angry action, if, in the language of a late celebrated phyſiologiſt, I may be allowed to uſe the expreſſion. After theſe general remarks, we proceed to ſay a few words on the

Prevention and Cure of Tubercle.

Vomiting. If tubercles take origin from different ſubſtances lodged in the air cells, agreeable to our notions of them, one chief indication, by way of prevention, will be to diſlodge theſe ſubſtances; and vomiting will conſtitute the principal mean. · In ſcrophulous conſtitutions, therefore, where there is great ſecretion of mucus in the aërial ſyſtem, and where the patient is thereby more liable to the diſeaſe, a vitriolic emetic, exhibited occaſionally, will prove an efficacious preventive: and, either a vitriolic or antimonial emetic ſhould never be omitted on the firſt attack.

The vitriolic emetic, which I have generally uſed, has been the white vitriol, in doſes of twenty or thirty grains.

While the practitioner is thus endeavouring to prevent the ſtagnation of mucus in the air cells, he will alſo endeavour to leſſen the ſecretion, by attempting to ſtrengthen the pulmonary ſyſtem by every method he is acquainted with, viz. by riding, ſailing, and particularly by an early and well-directed uſe of the cold bath; while he at the ſame time guards againſt too great fulneſs of the blood veſſels.

When we ſuppoſe tubercle is formed, even then the more active emetic medicines, as being very powerful promoters of abſorption, and as it is not improbable that tubercles may be abſorbed, will prove very valuable remedies.

In the early ſtate of the diſeaſe, when active inflammation is preſent, the emetic tartar is preferable to the vitriolic emetics, as being more adapted for leſſening the action of the ſanguiferous ſyſtem; while it at the ſame time promotes evacuations and determinations, tending to the removal of the diſeaſe. But after the diſeaſe has exiſted ſome time, and the fever is become a fever of irritation or debility, where the action of the ſanguiferous ſyſtem is weak; then the active and tonic emetic medicines, ſuch as the white or blue vitriol, ſhould be adopted.

In my remarks on caſe third, of pulmonary hæmorrhage, I have obſerved, why ſhould not tubercles be abſorbed? Now it is well known that the abſorbing veſſels are diſtributed in great numbers through the lungs, as well as through every other part of the body; and that not only collections of fluids, but ſolid tumors, and even bone itſelf, are frequently removed, in different parts of the body, by their means, without any ulceration. And why ſhould not tubercles alſo be removed in the ſame way; as likewiſe ſcirrhus, or induration of the lungs; for even through the ſubſtance of ſcirrhus there generally remain ſome veſſels capable of their uſual offices, as is clearly demonſtrated by the increaſe and diminution, and other changes, which every now and then take place in enlarged and indurated parts? We certainly believe they may, did we but know how to excite or command the vigorous and healthy action of the abſorbing veſſels. When we have acquired this knowledge ſufficiently, we ſhall then be able to command the proceſſes of complete abſorption, and of ulceration with greater certainty. Then, I truſt, we ſhall be enabled to ſay unto them, remove this tubercle, and they will do it: and, when engaged in the proceſs of ulceration, ſtop; and we ſhall be obeyed.

The learned Dr. Simmons was of opinion, long ago, that the increaſe of tubercle might be prevented by abſorption. He obſerves*, "medicines that operate in a general manner upon the ſyſtem may, by promoting abſorption and diminiſhing the determination to the lungs, tend to diſperſe tubercles or to prevent their formation;" and after, "if any remedy is capable of diſperſing a tubercle, I believe it to be vomits." I have generally uſed the white vitriol, as already mentioned, and given it in the above-mentioned doſes, once a week or oftener, according to circumſtances. Dr. Simmons recommends the blue vitriol, which may, perhaps, be more effectual. The reſolution of tubercles in this way is moſt deſirable; as when they terminate in abſceſs and ulceration, the ſituation of the patient becomes more dangerous, although the natural powers are often capable of remedying theſe morbid affections when properly regulated; and when, by the moderate uſe of liquids, and the other means recommended in theſe remarks, the different ſyſtems are left unembarraſſed, and at liberty to exert their powers of reſtoration.

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* Practical Obſervations on the Treatment of Conſumptions, p. 29.

Now it is well known that ipecacuanha will vomit; and that all emetics will promote abſorption to a certain extent; but we conceive that the metallic emetics poſſeſs the latter property in a more eminent degree. Here it may not be improper to notice ſome of the different effects of the emetic ſubſtances uſually employed, reſpecting which there ſeems to exiſt a conſiderable difference in the effects produced by their operation. One claſs of emetics, when given in doſes to produce vomiting, proves emetic without having much diſpoſition to purge, viz. ipecacuanha, &c. Another vomits, and often purges alſo, as the emetic tartar: and a third, while it only vomits without any riſk of purging, gives, at the ſame time, a more conſiderable and more permanent contractile ſtimulus to every contractile fibre in the body. The two former are preferable when too great vaſcular action exiſts; and the latter, when you wiſh to excite other actions in the body beſides vomiting. By the latter, therefore, you may clear the ſtomach, promote expectoration, and work other ſalutary changes in the lungs, without

out weakening your patient ſo much as by the former. And, in caſe of vomica, where matter has been formed, and is pouring out into the bronchia, the vitriolic emetic will aſſiſt in emptying it, and alſo tend to contract the cavity ſo as to prevent freſh formation: it may alſo, perhaps, excite new and more healthy actions of the abſorbing and ſanguiferous ſyſtems.

Purgatives may alſo be occaſionally adopted in the treatment of tubercle, not only on account of their determining from, and helping to keep ſufficiently empty, the veſſels of the lungs; but as alſo tending to promote the action of the abſorbents.

The magneſia vitriolata, and different preparations of jalap, are great promoters of abſorption, as alſo evacuants; and, as ſuch, I uſe them on this occaſion. I have found calomel, joined with antimonial powder, produce many good effects.

Moderate drinking. While you are thus endeavouring to prevent the formation of tubercle by vomiting, or, when formed, to promote its abſorption by vomiting, purging, and other remedies; a due abſtinence from liquids, by allowing greater freedom of circulation through the lungs, and the abſorbents more liberty to act, as well as permitting the proper expectoration to take place, will be of conſiderable ſervice, and ſhould be conſtantly kept in view.

The abſolute neceſſity of attending to this principle will appear more forcible if we recollect that, in conſumption ariſing from tubercles, the diſeaſe now under conſideration, as well as when that diſeaſe is accompanied with vomica and ulceration, it often happens that the veſſels of the lungs become gradually more and more impervious; until, from freſh inflammation, adheſion and obſtruction, the greateſt part of the veſſels are obliterated, and the patient, at laſt, thereby deſtroyed. This is particularly demonſtrated by the diſſections of Dr. Stark; who obſerves, "The pulmonary arteries and veins, as they approach the larger vomicæ are ſuddenly contracted; a blood veſſel, which, at its beginning, meaſured nearly half an inch in circumference, ſometimes (although it had ſent off no conſiderable branch) could not be cut up farther than an inch; and when, outward, they are of a larger ſize, yet, internally, they have a very ſmall canal, being almoſt filled up by a fibrous ſubſtance." Thus by this fibrous ſubſtance, or coagulating lymph, are the cavities of the larger blood veſſels gradually diminiſhed;

miniſhed; while by it alſo, in the ſame way, as well as in the manner before-mentioned, when ſpeaking of the formation of tubercle, are the leſſer blood veſſels alſo obliterated, forming ſuch impediments to the circulation that it will often be impoſſible for a fourth part of the quantity of blood, uſually circulated through the lungs, when in health, to paſs through them. How then is it poſſible that many additional quarts of liquids, which, if drunk, as is the common practice, in thoſe caſes, muſt paſs through the lungs before they are expelled the body (unleſs they are carried through the bowels by purging), can find a paſſage, from the right to the left ſide of the heart, through ſo ſmall a number of remaining veſſels?

Anodynes, and other remedies. While theſe principal operations are attending to, it will be of infinite conſequence to take off irritation, allay cough and fever, by occaſional blood-letting, bliſtering, ſaline antimonial medicines, a cool ſpare diet, and gentle anodynes. Reſpecting the latter I ſhall juſt beg leave to make a few obſervations. In treating diſeaſes of the lungs I have tried opium in every form, and have often found inconvenience from its uſe: for it is well known that opium, as being a very acrid ſtimulating ſubſtance, whatever ultimate ſedative effects it may produce, tends, in its firſt operation, to increaſe the phlogiſtic diatheſis of the ſyſtem; and I cannot help believing that, in this way, it often keeps up pulmonary inflammation. I have found the following the moſt effectual ſedative in the treatment of pulmonary complaints, viz. the Succus Cicutæ Spiſſatus Ph. Edinb. which is made, by mixing with the inſpiſſated juice, when reduced to a certain conſiſtence, a quantity of the powder. Of this preparation I generally begin with five grains, increaſing the doſe and frequency of exhibition according to the ſtate of the diſeaſe, and the exiſting irritability of the patient: it ſeems to me to poſſeſs conſiderable ſedative powers, without any ſtimulating property; and indeed the chief good effects of the cicuta ſeem to depend upon this direct ſedative property*.

Hence it may juſtly be conſidered as a medicine worthy of attention wherever you wiſh to quiet or diminiſh action, either of a particular part or of the ſyſtem in general, without increaſing or keeping up the phlogiſtic diatheſis or diſpoſition to inflammation.

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* Vide the Appendix.

And it ſeems particularly adapted to anſwer our preſent indications, viz. to diminiſh the cough, and ſuſpend the irritations of the pulmonary ſyſtem, until we, by various plans of treatment, endeavour to remove the exiſting cauſes of the diſeaſe. By this ſedative property, therefore, it may ſtop or ſuſpend the increaſe of tubercle, or other morbid enlargements, and conſequent ulceration; either by taking off the irritation naturally produced by them, and thus preventing farther determination, or by leſſening the irritability of the abſorbing veſſels, and thus preventing ulceration.

The ſyrupus papaveris albi, although an opiate, is much leſs ſtimulating than the pure opium or its tincture; and is, therefore, in many caſes, preferable to the other preparations of this narcotic medicine. This will readily occur to us, if we recollect, that, in this ſyrup, the ſtimulating ingredient is ſheathed by the mucilaginous part of the poppy-head, which, in a greater or leſſer proportion, is always extracted in the preparation.

When we have reaſon to believe that a patient has tubercles, and have tried the methods above recommended, or others, in order to promote their reſolution, without effect; the next indication which naturally preſents itſelf, is, to endeavour to prevent a diſpoſition to inflammation and ulceration, by making nature contented with them. On this principle balls, and other extraneous ſubſtances, may remain quietly in different parts of the body for many years: and ſtones formed in the kidnies, of long ſtanding, and whoſe ſize may be preſumed to be far beyond the reach of expulſion, can be made to continue quiet, and the patient enjoy tolerable health for a long ſeries of years. For this purpoſe, a ſtrict ſedative plan, as giving the cicuta, ſwinging*, ſailing, &c. is to be purſued; and every thing which can tend, either to occaſion or keep up irritation, is to be avoided. The proper determinations from the lungs and other general circumſtances are to be attended to; by which, and a particular attention to moderate drinking, the veſſels of the lungs will be retained ſufficiently empty, until the conſtitution becomes reconciled to the newly-formed impediments to the circulation through the lungs, and to the other offices of the pulmonary ſyſtem.

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* Vid. An Account of the Effects of Swinging, employed as a remedy in the Pulmonary Conſumption, by James C. Smyth, M. D. F. R. S. and Phyſician Extraordinary to his Majeſty.

It may, however, happen that, notwithſtanding every effort to prevent them, tubercles will go on to inflammation, ſuppuration and ulceration: and thus end in the ulcerative conſumption, which we next proceed to notice.

CHAP. V.

Remarks on the Treatment of Ulceration of the Lungs, and Pulmonary Conſumption.

IN the progreſs of our remarks we have ventured to ſtate our ideas on the riſe, progreſs and termination of tubercle; and we have ſeen that a common termination of it was in ulceration, which ſome Phyſicians have conſidered as the ſole cauſe of every true conſumption: and indeed almoſt all the morbid affections of the lungs, which produce that long lingering diſeaſe, ſuch as hæmoptöe, long-continued aſthma, tubercle, inflammation, &c. generally terminate at laſt in ulceration; which commonly produces a conſumption, more or leſs rapid. We have already obſerved, that great difference of opinion exiſted among practitioners, reſpecting the cauſe of this diſeaſe: and that many, having conſidered it as an inflammatory diſeaſe, had attempted to cure it by bleeding, and a rigid antiphlogiſtic plan; while others, imagining that it originated from ſcrophula, had purſued a very different treatment.

It may be worthy of notice, that, in a ſtate of debility, as well as in ſcrophula, the blood veſſels are weak, and ſeem often to want that contractile power neceſſary for a free and proper circulation, and hence that plethoric ſtate of the lungs, and of the whole body, frequently preſent in thoſe ſtates of the conſtitution. Dr. Simmons, in his book on conſumption, already mentioned, p. 8, ſays, "The genuine phthiſis is uſually the effect of a certain pre-diſpoſition of body which is very often hereditary."

Now, may not this pre-diſpoſition conſiſt in the relaxation, and conſequent plethoric ſtate, of the veſſels of the lungs above mentioned; occaſioning over-diſtention of the blood veſſels, and hence rupture of them, compreſſion of the ultimate branches of the bronchia, ſtagnation of mucus or lymph, tubercle, ulceration, and conſequent conſumption.

This would ſeem probable from what we have ſaid of the aſthma, which frequently takes origin from the cauſes above mentioned: for, in our remarks on aſthma, p. 74, we have particularly obſerved, that, from the diſtention of the blood veſſels, and the conſequent preſſure upon the bronchia, mucus may be arreſted in the air cells, which may produce tubercles, and ultimately conſumption. And diſſection has ſhown that all aſthmatics, who have had the diſeaſe for any length of time, have had more or leſs of other pulmonary diſeaſe: and that tubercles, which we believe may be occaſioned in this way, are frequently found in the lungs of aſthmatic patients. If, therefore, our ideas of the cauſe of aſthma be allowed, and that tubercle and conſumption may be thereby produced, it will be allowed that weak and over-diſtended pulmonary blood veſſels conſtitute, at leaſt, one cauſe of the diſeaſe. Now, we have already ſtated, what can ſcarcely be denied, that, when any part of the body is diſeaſed, that part can only be reſtored by the proper exertion of the powers naturally inherent in that part; and it will not be diſputed, that the lungs poſſeſs the ſame powers of reſtoration, as any other part of the body: it will, therefore, naturally follow, that every impediment to the proper exertion of the natural powers of the lungs will conſtitute a cauſe, why ulceration and other morbid affections of the lungs may be the more difficult to cure. Why, therefore, are not ulcers of the lungs as readily healed as ulcers of other parts of the body? This we preſume ariſes from the following cauſes, viz. 1ſt, From their conſtant motion, from which the ulcerated ſurface is kept in a continued ſtate of irritation. 2d, From a conſtant expoſure to atmoſpheric air, which is in general hurtful to ulcerations of external parts expoſed to its influence, and which may, perhaps, on ſome occaſions, proceed from its containing an increaſed proportion of oxygen. 3d, From embarraſſment of the different pulmonary ſyſtems, viz. either from over-diſtended, or too conſtantly, or improperly acting blood veſſels. From a due conſideration of theſe cauſes, therefore, do we deduce our preſent indications of cure, in pulmonary conſumption ariſing from ulceration of the lungs; which we conceive, may be divided into the three following general heads, viz.

1ſt, To place the lungs, as much as poſſible, in that eaſy, quiet ſtate, in which you would place an external part affected with an irritable ulcer, or where certain circumſtances expoſed that part to irritation; by removing every impediment to the proper and eaſy exerciſe of their natural functions.

2d, To regulate the application, or inhalation of the atmoſpheric, or other airs, or vapours, ſo that the actions of the internal ulcerated ſurface may be either increaſed or diminiſhed, according as circumſtances ſhall require.

3d, To direct properly the natural powers of the whole pulmonary ſyſtem in the due performance of its natural functions: to excite the actions of its different branches, if too languid; or to reſtrain them, if too active.

We ſhall here juſt obſerve, that, in fulfilling theſe three general indications of cure, it will be perceived by every intelligent practitioner, that the plan of treatment may be ſo blended, that either two, or perhaps the whole, may be fulfilled at the ſame time.

The 1ſt *indication of cure*, we attempt to fulfil by leſſening the quantity of the circulating fluids, and by regulating the circulating ſyſtem ſo, that the blood may be determined, as much as poſſible, to the other parts of the body. Theſe purpoſes we accompliſh by flannel, a moderately warm atmoſphere, vomiting, purging,

ing, the moderate uſe of liquids, and occaſional bleeding; by giving ſulphur, tar water, and mild volatile demulcent medicines; by rubefacients, dry cupping, bliſters, cauſtics, ſetons, and other external applications and remedies, which will readily occur to the ſagacious well-informed practitioner.

Now we have already ſeen, that the two great impediments to the removal of any morbid affection of the lungs are, their conſtant motion in reſpiration, and the too great fulneſs of their blood veſſels; and that the eaſe of reſpiration depends much upon the ſtate of theſe veſſels. We have, alſo, when treating on hæmorrhage, aſthma, and catarrh, pointed out the various modes of removing this fulneſs: to which the reader will be pleaſed to refer. We have there clearly demonſtrated that the plentiful dilution uſually employed is inconſiſtent and improper; and have pointed out an oppoſite principle, viz. *the ſpare uſe of liquids*; the good effects of which will be readily acknowledged by every candid practitioner who will make the trial. Indeed, in no one pulmonary diſeaſe ought this principle to be neglected: we therefore beg leave to enforce it in the treatment of pulmonary conſumption as one of the chief means of keeping the lungs at eaſe. Having lately had occaſion to conſult the juſtly-admired Aretæus, whoſe practical acuteneſs and accuracy has ſcarcely been equalled in any age or country, I found, in his treatiſe on the cure of Peripneumony, the following very remarkable paſſage, viz. "but on the whole, drink ſhould be exhibited very moderately, for moiſture is pernicious to the lungs, as they naturally attract, both from the gullet and ventricle." Here his penetration diſcovered, or rather his practice taught him, that little drinking was proper for the patient; although, being unacquainted with the nature of the principle we contend for, he accounts for it by a falſe theory. This, however, does not diminiſh the practical fact; and, therefore, Aretæus's practice evidently confirms the propriety of our principle in the treatment of pulmonary diſeaſes. The quantity of liquid, which I have generally found ſufficient in the twenty-four hours, has been from half a pint to a pint and an half. By this regulation of drink the breathing has ſoon become eaſier, and the hectic ſymptoms greatly diminiſhed: indeed the night ſweats and colliquative diarrhœa ſeldom continue during this mode of cure.

One great difficulty occurs in the cure of conſumption, which is that many different ſtates of the lungs often exiſt at the ſame time, viz. in one portion ſhall exiſt a tubercle, in a ſtate of ſuppuration; in another, tubercles may be forming; and, in a third, the proceſs of ulceration may be going on. In the treatment, therefore, the above general principles can only be adopted. In an ulcerous ſtate of the lungs, how far the exhibition of emetics, as being conſiderable promoters of abſorption, and ulceration being itſelf an action of the abſorbing veſſels, is proper, I am at preſent unable to determine. But I can conceive that emetics may ſuſpend the preſent exiſting morbid action, and perhaps induce a mode of abſorption more adapted to the recovery of the patient.

Dr. Cullen found that, in many ulcerations, the blue vitriol was more uſeful than any other kind of emetic. Was this from its giving the contractile ſtimulus to the ulcerating ſurface, and thereby conſtricting, or ſhutting up the mouths of the abſorbing veſſels; or was the tone of the general ſyſtems of the body thereby increaſed, and more firm, or more ſalutary actions both of the ſanguiferous and abſorbing ſyſtems thereby induced? I believe the latter: and think that a vitriolic *emetic* (either of white or blue vitriol), increaſes the healthy action, both of the abſorbing, and ſanguiferous ſyſtems. But the reader will be pleaſed to attend, that I do not mean that the blue vitriol may be given in ſmall doſes, as a tonic: on the contrary, I believe that this preparation of copper, as well as all the preparations of this metal, act as poiſons, when given in this way. I have ſeen it given in mortifications of the extremities, but with the ſame effects: it produced debility, anxiety, cold ſweats, &c. The white vitriol I have often given, in ſmall doſes, as a tonic; and with evident good effects.

Now, if we examine all the cures which have been performed, whether by nature or art, of both of which there are many well-authenticated inſtances, it will appear probable, that they have chiefly been accompliſhed by different circumſtances which tended to fulfil the preſent indication, and to put the lungs in that quiet, and eaſy ſtate, upon which in a great meaſure depends the proper exertion of the powers of reſtoration, by which alone recovery is to be brought about.

Bleeding has been the chief anchor of hope to many phyſicians in the treatment of this diſeaſe:

and Dr. Dover, as we have before noticed, has preſcribed this operation even to the fiftieth or ſixtieth time. And the late Sir William Fordyce reſted his chief hope upon blood-letting. The quantity taken at one time was certainly ſmall, which uſed to be the common direction, viz. a frequent repetition of venæſection in ſmall quantities. Feeble indeed muſt this practice have been, which was only calculated to relieve a ſymptom, which would recur in a few hours, or perhaps, minutes, after the operation. For it could only relieve, for a moment, ſome difficulty of breathing, which was perhaps occaſioned (or if it was not, would certainly be increaſed), by the plentiful dilution ſo improperly recommended in diſeaſes of the lungs. Would it not have been much more rational to have uſed greater moderation in drinking, and, at the ſame time, the different means of determination, and thus ſaved the ſtrength of the patient? For by theſe bleedings the patient was drained of that vital power upon which alone reſted his recovery. The loſs of blood relieved him for the moment, in the ſame way as a looſe motion or gentle diaphoreſis, each tending to relieve the lungs: but, how much more preferable than bleeding? When we recommend this operation, it is generally under ſome urgent circumſtances, where no room is left for adopting the other means of cure.

Moderate Drinking. Here we ſhall beg leave to remark that the principle of moderate drinking, which we contend for, has been often adopted without being attended to, and a cure thereby accompliſhed. In this way I would account for the recovery of moſt of thoſe conſumptive patients, who have been cured by a voyage to Liſbon, to the Weſt Indies, &c. which happens in this way. In the firſt place, they are generally ſick on firſt going to ſea; and if they do not vomit, they are at leaſt ſeveral days without drinking much liquid; and indeed the water is in general ſo indifferent, that they drink but little during the voyage. And if they are alſo affected with almoſt continual vomiting, which often happens, it will be readily conceived, that the blood veſſels will be left ſufficiently empty. Thus, therefore, are the lungs left at eaſe, in the ſame way as by moderate drinking; while the change of air, and the ſedative effects of the ſhip's motion, perhaps aſſiſt in accompliſhing a cure.

On the ſame principle do I believe that grapes, and other fruits, have cured a conſumption, in a warm climate, by purging; while the blood was, at the ſame time, determined to the ſurface of the body, and there retained by the congenial warmth of the atmoſphere.

Indeed all the accounts of conſumption, cured in the confirmed ſtate of the diſeaſe, ſeem to me to be ſo many hiſtories of particular determinations from the lungs; while, at the ſame time, the ſtrength was ſupported, or ſalutary changes induced, by good air, change of ſcene, agreeable company, &c.

By the one, the veſſels of the lungs were kept ſufficiently empty; and by the other, an end was put to the diſeaſed actions, and new and healthy ones produced in their place.

Purging. Although all purgatives, by their ſtimulus upon the alimentary canal during their action, will in ſome degree call the blood off from the lungs; yet ſome purgatives are preferable to others, in attempting to evacuate the ſuperfluous water of the blood by the bowels.

But whenever they are taken for this purpoſe, little drink ſhould certainly be taken during the operation. Authors have in general recommended to diminiſh the determation to the lungs, but while they have been uſing purging and the other means proper for this purpoſe, their plentiful drinking or dilution has ruined every attempt to ſucceed, by counteracting their endeavours. In the latter ſtages of the diſeaſe much circumſpection is neceſſary in adminiſtering purgative medicines. Then the vital powers are too low for attempting this mode of determination; which however has been accidentally ſucceſsful: and, as we believe, on the ſame principle of keeping the lungs at eaſe, by retaining their blood veſſels in a moderately diſtended ſtate. We have before mentioned Dr. Cullen's idea, that purging did not relieve the veſſels of the thorax. That the Doctor was miſtaken, is very evident from what we have ſaid of aſthma, hæmorrhage, &c. But, many more examples could be given, where conſumptive patients have been cured by conſiderable purging; which has happened ſometimes, by accident, and, at other times from medicines given with that view. In May, 1793, a ſtriking example of this kind occurred to myſelf. I was then ſent for by a lady, as reſpectable for her rank, as venerable for her years and virtues, who had laboured under pulmonary affection for ſome time. She was then bringing up blood and matter, and was confined to her bed. Her pulſe in the morning was about one hundred and ten, and poſſeſſed ſome degree of firmneſs; and her bowels were much confined. As I was not her apothecary, ſhe only ſent for me to give her a little opening medicine, to remove coſtiveneſs. I, accordingly, ſent her two draughts, each compoſed of half an ounce of magneſia vitriolata, with a little tincture of ſenna and rhubarb to quicken the operation; with directions to take one immediately, and repeat the other after four or five hours, ſhould the firſt fail of ſucceſs. As no effect was produced by the firſt, ſhe took the ſecond: and they both purged her about twenty times.

She gave me this account next day; and added, angrily, that the phyſic I had given her was fitter for a horſe than for a chriſtian. However ſhe became better from this moment: and the morbid affections of the lungs gradually diſappearing, ſhe ſoon recovered her uſual health. I now attend her whole family, and am happy to ſay that ſhe enjoys at this time the moſt perfect health, although at a very advanced period of life.

Vomiting is uſeful, not only by determining to the ſurface of the body, and promoting expectoration, but alſo by ſtopping, or ſuſpending, the exiſting morbid actions of the lungs.

We have already noticed the different effects of the different emetic ſubſtances commonly employed; ſo that it remains with the practitioner to judge when the one, or when the other, is to be adopted. Although, when ulceration has actually commenced, the vitriolic appears to claim a decided preference. In an active inflammatory ſtate, the emetic tartar is preferable to any other; as, beſides the property of promoting evacuation, and determining to the ſurface of the body, it alſo poſſeſſes the power of relaxing, and thus diminiſhing the action of, the ſanguiferous ſyſtem.

Sulphur has been recommended, by ſome phyſicians, in the pulmonary conſumption, but, being conſidered as a very heating ſubſtance, and as more or leſs of fever is generally preſent in this diſeaſe, it has ſeldom been uſed. But Dr. James Sims, in his obſervations on epidemic diſorders, obſerves, page 124, " Sulphur is al-" moſt the only laxative which does not dimi-" niſh perſpiration; neither does it raiſe any " degree of heat." From his recommendation I have often uſed it as one of the means of determining from the lungs, and of keeping the body open; and with conſiderable advantage. And the moſt particular attention to the pulſe never pointed out any heating effects, or increaſed action of the blood veſſels in conſequence, although given in conſiderable doſes.

Tar-Water may alſo be given as another auxiliary in fulfilling this indication. There is a cordial, exhilarating property in tar-water, which ſeems to determine from the centre to the circumference, without heating, and which has appeared well adapted for our preſent purpoſe. But when it was uſed, the other liquids allowed were diminiſhed in proportion. A quarter of a pint of ſtrong tar-water was given twice a day. Tar-pills have alſo been found uſeful on the ſame principle.

Mild Volatile Medicines ſeem to act in the ſame way as the tar-water, viz. by determining to the ſurface of the body.

Rubefacients, Dry Cupping, Bliſters, Cauſtics, and *Setons* alſo determine outwardly, while they, at the ſame time, produce a ſet of external actions which may, in ſome meaſure, call off the nervous influence from the internal ones; and, thus, either ſtop, or ſuſpend them.

Flannel and Fleecy Hoſiery prove of much advantage to the conſumptive of this country; by keeping up a regular and uniform determination to the ſkin, and thus preventing thoſe internal determinations which, otherwiſe, regularly attend the ſudden changes of this variable climate.

Gum Ammoniac and *Squill Vinegar.* Pure gum ammoniac, triturated with ſquill vinegar, ſo as to form a kind of ointment, has been ſpread on leather and applied to the outſide of the cheſt, for the purpoſe of external determination: and often with good effects.

Turpentine Ointment. The following I have uſed with advantage in endeavouring to keep up the external determination, viz.

℞. Terebinthinæ Venetæ,
Mellis, ſingulorum drachmas duas,
Spiritus Ammoniæ Compoſiti drachmas tres,
Axungiæ Porcinæ unciam unam: miſce et fiat unguentum, partibus thoracis externis, bis vel ter die, applicandum.

But an objection may juſtly be ſtarted to the frequent uſe of external applications, particularly in cold weather; as determination to the lungs is apt to happen, at the moment of uſing them: the bad conſequences of which could not be counterbalanced by their good effects.

In order therefore to keep up a regular determination to the ſurface of the body, I have often thought that a flannel veſt, whoſe internal ſurface was thinly beſmeared with tar, and renewed after three or four days, would anſwer very well for this purpoſe without being liable to the objection juſt mentioned. But I have not yet had an opportunity of trying it. Would a mixture of honey and tar; or would any other ſubſtance be better?

We know that the ancients anointed the external parts of the cheſt with oil with a ſimilar intention.

Here I need not remind the reader, that a certain degree of ſtrength is neceſſary to bring about a proper determination for the lungs; for he well knows that, under whatever diſeaſe the body labours, it muſt be more or leſs ſupported, according to the nature of the diſeaſe, and conſtitution of the patient: nor can the natural functions of diſeaſed lungs be properly performed, unleſs they poſſeſs adequate powers. With a view, therefore, of giving ſtrength, and promoting external determination, particularly in the latter ſtages of the diſeaſe, ſome white, or light, wines, will be found of conſiderable ſervice; given either diluted, or alone, according as the practitioner ſhall judge proper.

Climate. It has been obſerved, that many inſular ſituations have proved unfavourable to the conſumptive. Whether this is from a too cold, or too changeable atmoſphere, or from any thing noxious in the proximity of the ſea, I leave to the determination of the more experienced phyſician. It is generally ſuppoſed that the changeableneſs of our climate renders the inhabitants of Great Britain particularly liable to pulmonary complaints; and that, when theſe are once formed, the ſame cauſe operates as one of the greateſt obſtacles to recovery.

It is, therefore, uſual for the Engliſh phyſicians to order their conſumptive patients into a warmer climate, and to one leſs changeable than our own. And it is obſervable, that a certain degree of warmth of climate, when accompanied with a certain ſteadineſs of temperature, by keeping up a regular continued determination to the ſurface of the body, is highly conducive to the cure of pulmonary complaints. Yet it has been found, that, beyond a certain temperature, the fate of the conſumptive was accelerated, as appears by the following quotation from a very reſpectable author.

He obſerves, page 301, " Pulmonary con-
" ſumptions rarely originate in the iſland (Ja-
" maica), but thoſe who come from England,
" with that complaint already begun, are not
" benefited by the warmth of the climate; on
" the

"the contrary, the diſeaſe is precipitated, and "proves ſooner fatal than it would have done "in a more temperate air. Of this we had re- "peated examples among the ſoldiers, ſeveral "of whom arrived in the iſland with beginning "conſumptions, and were all quickly carried "off by that diſeaſe *."

The ſame author obſerves, that in Jamaica, during the hotter months, the thermometer ranges from 85° to 90°. Whether the above effects ariſe from the heat producing general debility, or from its effect upon the internal ſurface of the lungs, I do not pretend to determine: perhaps both. The climate, therefore, ſhould neither be very hot nor very cold, nor liable to frequent changes of temperature.

Pregnancy produces another determination from the lungs, which has been found to ſuſpend the fate of the conſumptive: and, I believe, that, during pregnancy, the diſeaſe may be frequently cured, if proper methods are purſued.

The ſecond Indication. We have already noticed that inhalation, either of air or vapour, is the only mode of local treatment, when the lungs are diſeaſed. And it has been obſerved by authors, that one great reaſon why ulcerations of the lungs are ſo difficult to cure is their being ſo conſtantly expoſed to the action of the atmoſphere. We ſhall therefore enquire into ſome general circumſtances reſpecting the effects which are likely to be produced upon an ulcerated ſurface by ſome of the different kinds of air.

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* Obſervations on the diſeaſes of the army in Jamaica, &c. by John Hunter, M. D. F. R. S. and Phyſician to the army.

In treating ulceration of the lungs, or even of any other part of the body, great reſpect is to be paid to the temperature as well as to the chemical properties of the air: cold air is in general more unfriendly to all, than a kindly warm air; and cold air is, in general, hurtful to the conſumptive, as, beſides its effects upon the internal ſurface, it will alſo determine the blood inwardly upon the lungs, and thus occaſion more or leſs increaſe of the exiſting morbid affections. It is now well known, that atmoſpheric air is a compound, conſiſting, according to the more modern accounts, of oxygen (pure) air, one part; and azotic air, or air unfit for animal and vegetable life, and combuſtion, three parts: and that, according to the proportions of theſe different ingredients, the common air is more or leſs ſtimulating, and will be therefore more adapted at one time than at another for favouring the recovery of ulcers expoſed to its influence. As every experiment hitherto made with oxygen air, reſpecting the lungs, proves it to poſſeſs ſtimulating properties to ſo great a degree as to be incompatible with health even in their ſound ſtate. It will, therefore, be readily believed, that the conſtant application of any conſiderable proportion of this ſtimulating ſubſtance to their tender, irritable, and ulcerated internal ſurface, muſt be highly detrimental in attempting a cure. Therefore, in an atmoſphere containing a ſuper-abundant quantity of oxygen air, the ulcerated and tender ſurface will be irritated, and the patient's cough increaſed in conſequence, as well as perhaps all the other exiſting pulmonary affections. But, notwithſtanding that a certain quantity of oxygen air is ſo abſolutely neceſſary for life that we cannot live but a very ſhort time without it: yet, as a very ſmall quantity of it will ſupport life for ſome time, its proportion may, therefore, be leſſened, if too ſtimulating, by reducing it with hydrogen air, which ſeems to be the beſt adapted for that purpoſe; as, beſides the property of rendering the oxygen leſs ſtimulating, by its chemical combination, and decompoſition, the hydrogen air ſeems to poſſeſs ſedative properties, which, together with the abſtraction of the ſtimulant ones of the oxygen, will produce conſiderable good effects upon an irritable ulcerated ſurface, commonly expoſed to an atmoſphere ſuperabounding with oxygen.

The ingenious Dr. Beddoes conceiving that conſumption originated from a ſuperabundant quantity of oxygen air in the blood, has recommended to inſpire the common atmoſpheric air, mixed with a certain proportion of hydrogen air; which he imagines will neutralize the ſuperabundant oxygen, and thus prove a valuable remedy in the cure of conſumption. Whether his conjecture be, or be not, well founded remains yet to be determined. The ſedative properties, however, of the hydrogen air abovementioned ſeem to me to account for the good effects produced in the experiments made by this indefatigable phyſician; but which, reſpecting conſumption, I imagine, are chiefly confined to the internal ſurfaces with which it comes in contact. For it is well known that hydrogen air is ſo highly ſedative that, if increaſed to a certain degree, it will deſtroy life, in the ſame way as a too increaſed doſe of cicuta*, and other ſedative ſubſtances of that claſs, viz. by gradually diminiſhing all the actions of the body, and at laſt deſtroying them, together with that of the heart itſelf. By this ſedative property, therefore, do I conceive that a certain quantity of hydrogen air, mixed with an atmoſphere abounding with a too-increaſed proportion of oxygen air, may prove uſeful in ulceration of the lungs. It may imitate, in a certain degree, that ſoft and congenial atmoſphere ſo eagerly deſired by the conſumptive.

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* Vide Obſervations on ſedatives in the Appendix.

And as it is probable that, to an over-proportion of oxygen air exiſting in atmoſpheric air, is owing the irritation of wounds expoſed to the air; ſo the hydrogen air, as combining with the oxygen, will thus deprive the atmoſpheric air of its irritating property: while the ſuperabundant portion of hydrogen air will add ſedative properties of infinite importance to an irritable ſore. Dr. Ewart obſerves, " and the " accurate Mr. Watt aſſures me that this air " (hydrogen) has a powerful effect in allaying " the pain of external inflammation and ſores," which gives additional ſupport to the idea of good effects being produced by it on the internal ſurface of the lungs, when ulcerated. While you thus attend to the chemical properties, it is alſo neceſſary to pay attention to the temperature, which, if not exactly adapted to the conſtitution and nature of the caſe, will more or leſs diſagree with the patient. For it is well known, that many pulmonic affections are either relieved or cured by removing the patient from a cold and bleak ſituation into a warmer, although leſs pure. But, if the pneumonic affections ariſe from debility, as is often the caſe in aſthma, a cool, keen air invigorates the whole pulmonary ſyſtem, and often gives almoſt inſtantaneous relief.

On the above principles I have frequently relieved aſthmatic patients, according to the various cauſes which produced their complaints, according to the ſeaſon of the year, or according to the particular ſtate of the veſſels of the lungs of each patient, by ſending ſome of them from Mary-le-Bone to Charing Croſs or to the city, and others to Hampſtead: and, in my election, I always attended as much to temperature as to chemical properties.

The inhalation of ſedative vapour from decoctions or infuſions of the cicuta, or white-poppy heads, I have, occaſionally, uſed with good effects. And, when I have thought that an inactive ſtate of the internal ſurface exiſted, I have added to the liquor, the vapour of which was to be inhaled, a ſmall quantity of diſtilled vinegar, in order to increaſe its activity. And, when the lungs have ſo far recovered themſelves, that the general ſymptoms indicate rather an inactive and relaxed ſtate of the whole pulmonary ſyſtem, than an irritable or inflamed one; then an increaſed proportion of oxygen air, added to the uſual atmoſphere, will doubtleſs tend to the recovery of the patient, by invigorating the conſtitution in general, and the pulmonary ſyſtem in particular. Whenever this plan is indicated, it may be a queſtion, whether it will tend as much to the benefit of the conſumptive patient to ſeek for it modified in nature's own way, viz. in the midſt of luxuriant verdure and foliage, when the ſun has properly performed that natural operation ſufficiently demonſtrated by the experiments of Dr. Ingen-Houſz; as when it is obtained from manganeſe, or nitre, &c. and mixed with atmoſpheric air in the way moſt approved by Dr. Beddoes, and the other gentlemen who have made this branch of medicine their particular ſtudy. The latter plan indeed muſt be adopted when the patient is unable to leave his chamber. As a certain proper mixture of oxygen, or pure air, is of great importance to the conſumptive in every ſtage of the diſeaſe, and as plants, whether in leaves, flowers, or fruit, have more or leſs influence upon the air as to its purity, it may not be improper to lay before the reader ſome obſervations on this ſubject, by the above-mentioned reſpectable philoſopher, Dr. Ingen-Houſz. They therefore follow.

The Doctor, in his preface, page 64, ſays, " * J'obſervai que les plantes n'avoient pas " ſeulement la faculté de corriger l'air impur " dans l'eſpace de ſix jours ou plus, comme les " expériences de M. Prieſtley ſemblent l'indi-" quer ; mais qu'elles s'acquittent de ce devoir " important dans peu d'heures, de la manière la " plus complette ; que cette opération marveil-" leuſe n'eſt aucunement due à la végétation, " mais à l'influence de la lumière du ſoleil ſur " les plantes. Je trouvai que les plantes poſsè-" dent en outre l'étonnante faculté de purifier " l'air qu'elles contiennent dans leur ſubſtance, " & qu'elles ont ſans doute abſorbé de l'atmoſ-" phère, & de le changer en un air des plus " purs, véritablement déphlogiſtiqué ; qu'elles " verſent une eſpèce de pluie abondante (s'il

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* Vide Expériences ſur les Végétaux, Vol. I.

“ eſt permis de s’exprimer ainſi) de cet air vital
“ & dépuré, qui, en ſe répandant dans la maſſe
“ de l’atmoſphere, contribue réellement à en
“ entretenir la ſalubrité, & à la rendre plus ca-
“ pable d’entretenir la vie des animaux—qu’il
“ s’en faut beaucoup que cette opération ſoit
“ continuelle, mais qu’elle commence ſeulement
“ quelque temps après que le ſoleil s’eſt élevé
“ ſur l’horizon, après qu’il a, par l’influence de
“ ſa lumière, éveillé les plantes engourdies pen-
“ dant la nuit, & après qu’il les a préparées &
“ rendues capables des reprendre leur opération
“ ſalutaire ſur l’air, & ainſi ſur le règne animal:
“ opération ſuſpendue entièrement pendant l’ob-
“ ſcurité de la nuit; que cette opération des
“ plantes eſt plus ou moins vigoureuſe, en rai-
“ ſon de la clarté du jour, & de la ſituation de
“ la plante plus ou moins à portée de recevoir
“ l’influence directe du ſoleil; que les plantes
“ ombragées par des bâtimens élevés ou par
“ d’autres plantes, ne s’acquittent pas de ce de-
“ voir, c’eſt-à-dire, n’améliorent pas l’air, mais,
“ au contraire, exhalent un air mal-faiſant &
“ nuiſible aux animaux qui le reſpirent, & ré-
“ pandent un vrai poiſon dans l’air qui les en-
“ vironne; que la production du bon air com-
“ mence à languir vers la fin du jour, & ceſſe
entiérement

“ entiérement au coucher du ſoleil ; mais qu'il “ faut en excepter un petit nombre de plantes, “ qui continuent leur action ſalutaire un peu “ plus long-temps que le reſte ; que toutes les “ parties de la plante ne s'occupent pas de cet “ ouvrage, mais ſeulement les feuilles, les tiges “ & rameaux verts qui les ſupportent ; que les “ plantes âcres, puantes, & même les vénéneuſes, “ s'acquittent de ce devoir comme celles “ qui répandent l'odeur la plus ſuave, & qui “ ſont les plus ſalutaires ; que la plupart des “ feuilles, ſur-tout celles des arbres, verſent cet “ air déphlogiſtiqué en plus grande abondance “ de leur ſurface inférieure ; que les feuilles “ nouvelles, & celles qui n'ont pas encore acquis “ tout leur accroiſſement, ne répandent “ point autant d'air déphlogiſtiqué, ni d'auſſi “ bonne qualité, que celles qui ſont parvenues “ à leur grandeur naturelle, ou dejà vieillies ; “ que quelques plantes préparent un air déphlogiſtiqué, “ d'une meilleure qualité que d'autres ; “ que quelques plantes, ſur-tout parmi les aquatiques, “ excellent dans cette opération ; que “ toutes en général corrompent l'air environnant “ pendant la nuit, & même au milieu du “ jour, dans l'ombre ; que quelques plantes cependant, “ qui ne cèdent à aucune autre dans

“ leur opération diurne à préparer l’air déphlo-
“ giſtiqué, ſurpaſſent néanmoins les autres dans
“ leur pouvoir d’infecter l’air commun pendant
“ la nuit & dans l’ombre, juſqu’au point même
“ de rendre en peu d’heures une grande maſſe
“ d’air tellement corrompue, qu’un animal plongé
“ dans cet air y périt en quelques ſecondes; que
“ toutes les fleurs exhalent conſtamment un air
“ mortel, & gâtent l’air environnant pendant le
“ jour & pendant la nuit, à la lumière & à l’om-
“ bre; & qu’elles répandent un poiſon réel &
“ des plus terribles dans une maſſe conſidérable
“ d’air, où elles ſe trouvent enfermées; que les
“ racines récemment tirées de la terre ont la
“ même influence mal-faiſante ſur l’air qui les
“ environne, que les fleurs, à l’exception cepen-
“ dant de quelques racines; que les fruits en
“ général conſervent cette influence pernicieuſe
“ en tout temps, ſur-tout dans l’obſcurité, & que
“ cette qualité vénéneuſe des fruits eſt ſi grande,
“ que quelques-uns, même des plus délicieux,
“ tels que les pêches, peuvent, dans une ſeule
“ nuit, rendre l’air tellement empoiſonné, que
“ nous ſerions en danger de périr, ſi nous cou-
“ chions une ſeule nuit dans une petite chambre,
“ dont la porte & les fenêtres ſeroient exacte-
“ ment fermées, & où ſe trouveroit une grande

" quantité de ce fruit; que le ſoleil, ſemble n'a-
" voir pas le pouvoir d'arrêter l'influence per-
" nicieuſe des fleurs, eſt cependant capable de
" modérer les exhalaiſons nuiſibles de quelques-
" uns des fruits; que le ſoleil lui même n'a pas
" le pouvoir de rendre l'air commun d'une meil-
" leure qualité, ſans la concurrence des plantes;
" mais qu'au contraire, il eſt plutôt capable de
" le corrompre, s'il agit ſeul, &c."

The *third indication* of cure will be fulfilled by the proper exhibition and regulation of the different ſubſtances we have mentioned, when treating of the two former indications, whether applied internally to the ſtomach, or to the internal ſurface of the lungs by means of inhalation, in ſuch a way as the proper knowledge of the anatomy, phyſiology and pathology of the lungs will point out. Indeed it will in general be found, that, in fulfilling the firſt and ſecond indications, you alſo accompliſh this at the ſame time.

For example, it will often happen, that medicines will promote a particular determination from the lungs, and, at the ſame time, leſſen or increaſe the action of their blood veſſels: for inſtance, the emetic tartar, and ſaline nauſeating medicines will more or leſs determine to the ſurface of the body, while they will, at the ſame time,

ime, diminiſh the increaſed action of the ſanguiferous ſyſtem; and white wine, volatile and other medicines, while they determine outwardly, will, at the ſame time, promote a more vigorous action of the blood veſſels. And a medicine which determines to the bowels, to the kidnies, or to the ſkin, may alſo increaſe the action of the abſorbing veſſels; as the magneſia vitriolata, jalap, calomel, antimonial powder, calomel and nitre, and a variety of other medicines which will readily occur to the attentive and well-informed practitioner.

We ſhall conclude our preſent remarks, by relating two caſes of conſumption; the one of the moſt deplorable kind, where the patient's ſufferings were greatly alleviated and her life evidently prolonged by our method of treatment; and the other, where the patient was completely cured in the courſe of five weeks.

CASE I.

Of Conſumption, where the Lungs were ſo much diſeaſed that the Patient had no Chance of Recovery, much relieved by a limited Uſe of Liquids, and the Life of the Patient thereby prolonged: together with ſome general Remarks.

Mrs. Todd, wife of —— Todd, journeyman blackſmith, then living in Mary-le-Bone Street, and aged between thirty and forty years, applied to me on the 30th of May, 1793, after having been in a conſumption about eighteen months.

May 30th. This poor woman looks a moſt deplorable object: ſhe is waſted to a ſkeleton, with large drops of ſweat ſtanding on her forehead, and cannot raiſe or turn herſelf in her bed without aſſiſtance. She is now ſpitting blood and matter, and has done ſo for many months. She has conſiderable pain in the cheſt, attended with ſhort breathing and inceſſant cough; and brings up about a pint of bloody expectoration in the twenty-four hours. She cannot lie upon either ſide. Her pulſe is extremely weak, and beats about 130 in a minute:

and ſhe has conſiderable thirſt, and profuſe colliquative ſweats, both night and day.

Her bowels are diſpoſed to conſtipation. She is generally thirſty, and drinks a conſiderable quantity of weak liquids every day. About ſix weeks ago ſhe was able to walk out, when ſhe was condemned as incurable by a very reſpectable Phyſician; who adviſed her to go home, and pray to God Almighty to take or relieve her, as medicine could afford her no farther relief.

A few days after this ſentence was pronounced, ſhe began to keep her bed, gradually getting worſe until now; when, conceiving herſelf dying, ſhe requeſted my aſſiſtance. From an attentive conſideration of the hiſtory of the diſeaſe, and ſtate of the patient, I was but too well convinced of the ſagacity of the phyſician, and of the juſtneſs of his prognoſtic; and had, therefore, very little hopes of ſucceſs. Yet, having no doubt but that the limited uſe of liquids would afford her, at leaſt, ſome temporary comfort, I immediately ſet about the application of this principle; while I, at the ſame time, watched its effects with the moſt anxious and careful attention.

For the firſt three days, therefore, a due abſtinence from liquids was enjoined, viz. ſhe was allowed a pint of liquid only in the twenty-four hours, including tea, &c. and no medicine was given during that time which could interfere with the proper effects of this principle.

June 2d. She has adhered ſtrictly to the limitation of liquids preſcribed: and now looks cheerful and animated, and ſays that ſhe is better, and that her perſpiration is very much diminiſhed. Her pulſe is a little ſtronger, and alſo leſs frequent. Although, from this new trial, I was, more and more, convinced of the efficacy of my principle, yet I did not think myſelf warranted in truſting to it entirely; I, therefore, commenced the exhibition of every other medicine (together with a moderate uſe of liquids), which I thought was likely to forward the recovery of my patient.

And thus, by the moderate uſe of liquids, did I attempt to keep the lungs, as much as poſſible, at eaſe; while, by the diligent application of other means, I endeavoured to ſtop the exiſting morbid actions, and bring about healthy ones in their place.

As it would be too tedious to give the particulars of this caſe, and as they would, perhaps, anſwer no good purpoſe, I ſhall only notice the more material circumſtances which occurred during the treatment.

She took the flores ſulphuris for ſome days, in doſes of a drachm each, every four or ſix hours, and with evident advantage: for, beſides retaining the body ſufficiently open, without heating, or increaſing the frequency of the pulſe, it ſeemed to relieve the general pulmonary affections.

The cicuta was alſo of ſervice, by allaying irritation and cough. But, having given the calx antimonii illota for ſeveral days, from an idea that, by removing ſome obſtructions of the lungs, or fever, it might relieve the difficulty of breathing, and thus contribute to the benefit of the patient. I found I was miſtaken; for the general weakneſs, as well as the fever and night ſweats were thereby increaſed.

I adviſed a nouriſhing diet, and did not reſtrain her from a little animal food, when ſhe was inclined for it.

June 14. Having become progreſſively better, her pulſe is now tolerably firm and equal, and about 104. She has had no perſpiration for the laſt three nights, and is now able to ſit up in a chair. The expectoration is much better,

ter, and in a diminiſhed quantity, and ſhe has one regular motion every day.

June 29. Her pulſe is now only 92. She has little expectoration, little cough, and ſcarcely any perſpiration.

For eight or ten days ſhe continued, in every reſpect, ſo much better, that I began to entertain hopes of a recovery; and although her breathing was ſtill ſhort, I was inclined to impute part of that inconvenience to weakneſs. In the courſe of that time ſhe was ſo well as to be able to go down ſtairs, with ſome aſſiſtance, and drink tea with the lodgers below. And after this ſhe diſcharged her nurſe, and was able to cook her huſband's dinner, and do ſome other neceſſary offices in her apartment, for about a week: when feeling weak and exhauſted, and becoming feveriſh, ſhe complained of cough, ſhort breathing, &c. And all theſe ſymptoms increaſed rapidly, notwithſtanding every attempt to remove them, until the 18th, when ſhe died.

She never had any colliquative diarrhœa, not even when ſhe died: and as her ſtrength was ſo much exhauſted when I ſaw her, and as her bowels continued very regular, I did not venture to try that mode of determination.

Appearances on Diſſection. Having, on the 20th of July, opened the body, the following appearances preſented themſelves. In the abdomen every thing appeared cool and natural, nor were there ſcarcely any marks of putrefaction. The ſmall inteſtines, in which there appeared no extrication of air, were much contracted and lying in a very ſmall compaſs, but perfectly natural. In the pelvis was about half a pint of a clear browniſh fluid; which was, perhaps, from tranſudation after death. All the other abdominal viſcera were ſound: nor was there any inflammation on the peritoneum, or about the uterus.

Having next, after turning aſide the integuments and external muſcles, cut through the cartilaginous extremities of the ribs, I endeavoured to get into the cheſt as uſual; but found the pericardium ſo cloſely connected with the ſternum, that I could not raiſe the latter without cutting a ſmall portion of the former, which appeared a thick, tough, leathery kind of ſubſtance. The ſternum having been raiſed, a ſmall vomica appeared, on the fore part of the left lung, oppoſite to the cartilaginous extremity of the third rib, containing about an ounce of pure pus, which had no communication with any of the bronchial branches, and, therefore, could not be expectorated.

All the contents of the thorax appeared as if glued together; and adhered ſo firmly all round, that the ſternum, ribs, intercoſtal muſcles, pleura, diaphragm, and the contents of the thorax might have been juſtly conſidered as one great maſs firmly united together. The heart ſeemed natural, but pale; and the right auricle and ventricle were full of blood: and in the pericardium was contained ſeveral ounces of the ſame kind of fluid as that found in the pelvis.

On examining the lungs, they appeared wholly diſeaſed, excepting a ſmall portion of the lower anterior edge of the right lung. And, on cutting into their ſubſtance, they were found full of ſmall ſuppurations, ſome containing pus, others a cheeſy matter; together with adheſion and obliteration of the greater number of the ſmaller blood veſſels, air cells, and the ſmaller bronchial branches: the whole exhibiting a remarkable inſtance of what great diſeaſe may exiſt in the lungs, and yet life go on.

Now, as this poor woman had been confined to her bed for near ſix weeks before I ſaw her:

and as, when I did ſee her, ſhe appeared to me in a dying ſtate; and conſidering that ſhe, upon the whole, gradually recovered from my firſt attendance until a few days before her death; I truſt it will not appear improbable to ſuppoſe, that the whole of the morbid affections, which appeared on diſſection, were actually preſent when I firſt ſaw her.—If ſo, the inference is obvious. For ſeeing that, in the above ſtate of the lungs, even a fourth part of the quantity of blood, which was commonly circulated through them in health, could not now paſs through them, on account of the great obſtruction and obliteration of veſſels which had taken place; I, therefore, conceive, that the only chance this poor woman had of having her life prolonged was, to withdraw her liquids; and thus, by diminiſhing the quantity of fluids, which, if taken into the body, muſt neceſſarily paſs through the lungs, allow her to live until either the blood could find no paſſage through the remaining veſſels, or her ſtrength was unequal to the taſk of propelling it through the lungs. If, therefore, this patient got ſo well as to be able to do the neceſſary offices for herſelf and huſband, although the lungs were at that moment almoſt impervious to the circulating blood, can this be attributed to any other principle than that which was adopted and ſtrictly adhered to, viz. the limited uſe of liquids? Reſpecting the above-mentioned uſeful medicines, and a variety of others which were given her, none of them produced any very permanent good effects; as, after a few days, I was, generally, on that account, obliged to try ſomething new.

CASE II.

Of Pulmonary Conſumption, ſpeedily cured by our Method of Treatment[*].

The patient, whoſe caſe I am about to relate, is a little man, of a dark complexion, ſharp noſe, high cheek bones, and about thirty years of age.

May 5th, 1793. He has had a ſevere cough for about ſix months, attended with conſiderable expectoration, ſhort breathing, and pain in the ſide.

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[*] Vide Dr. Duncan's Medical Commentaries for 1793.

During the laſt three or ſour weeks, he has brought up a conſiderable quantity of blood, and yellow expectoration; and the ſpitting is now purulent and bloody. His countenance is ghaſtly and deſponding, being impreſſed with an idea (not generally entertained by patients of this deſcription), that he ſhall not recover. He has now a pain in one ſide, violent night ſweats, a dry ſurred tongue; is reſtleſs, and his pulſe is hard and frequent. He lives ſeveral miles from London, where he has been attended by his own apothecary, who has blooded and bliſtered him repeatedly, and uſed other means for his recovery, but without ſucceſs. He has been in the habit of drinking many quarts of diluents every day. I ordered him a light, cooling, vegetable diet, and the following medicines; enjoining him particularly not to exceed a pint of liquid in the twenty-four hours, including tea, &c.

℞. Extract. Cicut. ʒ j. divide in Pil. xviij. quarum ſumat ij. omni nocte.
Capiat etiam Hauſt. Cath. e Magneſ. Vitriol. omni altero mane, non bibendo inter operationem.

May 12th. He has taken his medicines regularly, and obſerved the directions in regard to liquids. His pills quieted the cough, which is now greatly better. He has had no night-ſweats ſince he took his firſt draught, and has ſeen no blood for four days paſt. The expectoration is much diminiſhed, and is now mixed with a frothy phlegm or mucus.

He eats his vegetable diet with pleaſure, and ſleeps well; his tongue is moiſt, with ſcarcely any fur upon it, and he is not thirſty. His opening draughts generally operated about three or four times. The pulſe is much ſofter, and leſs frequent; and the pain of the ſide is gone.

The medicines and regimen to be continued.

May 19th. He has now, to my great aſtoniſhment, ſcarcely any complaint. He has no expectoration, no fever, and no cough: he ſleeps well, and is acquiring fleſh and ſtrength. He ſometimes feels his breathing a little ſhort; yet he takes a deep inſpiration without pain or coughing.

> Capiat pilulas, ut antea; et hauſtum Cath. bis in hebdomada tantum.

I allowed him a little more freedom as to liquids, but ſtill recommended moderation.

He was to return in a fortnight; but, being quite free from complaints, I only ſaw him about a month after, when he was in perfect health, and is ſo at this moment, without having had any return of his pulmonary complaints.

In the above caſe, it is evident that great pneumonic affection exiſted, and that the patient was marching, with haſty ſtrides, towards the other world. The lungs were overwhelmed with diſeaſe, while they were at the ſame time oppreſſed by the quantity of drink taken by the patient. Their morbid affections were thereby increaſed, while their healthy efforts were either leſſened or prevented.

APPENDIX.

OBSERVATIONS ON SOME OF THE ARTICLES OF THE MATERIA MEDICA.

CHAP. I.

On the Roſa Rubra, Flores Chamæmeli and Sarſaparilla.

THE Roſa Rubra*, or Red Roſe, has been allowed, both by the ancients and moderns, to poſſeſs conſiderable aſtringent powers; which no one, who has ever made the conſerva roſarum and accidentally uſed an iron ſpatula, will diſpute. Dr. Rutty obſerves, " maxime adſtringens eſt, præcipue in gemmis:" and, notwithſtanding that every experiment which can be made will prove this fact, no practitioner has yet pointed out how theſe aſtringent powers are to be obtained. Yet it will appear, on a moment's conſideration, that the chief aſtringent properties of the roſe can be obtained, for common uſe, in no other way than by decoction, although ſome of its aſtringency may be extracted by infuſion. For it is well known that, wherever the virtues of a ſimple reſide in its more fixed parts, decoction is preferable to infuſion, for extracting them; and vice verſà, when they reſide in the more volatile parts. Now, as the chief virtues of the red roſe are entirely confined to its more fixed parts, it muſt appear evident that decoction is the moſt proper mode of extracting them. And it may alſo be obſerved, that, when you give a preparation of this roſe for ſtopping a bleeding veſſel, you have no particular wiſh to preſerve its fine volatile odour, which cannot, in the leaſt, add to its aſtringent or tonic properties. Reſpecting the different effects of decoction and infuſion in extricating the aſtringent virtues of the roſe, the reader will be convinced by the following experiments:

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* Roſa Gallica Linnæi.

After having made the infuſum roſæ, as preſcribed in the preſent Pharmacopœia, I boiled the ſame roſe leaves in a double quantity of water to one half (which remainder preciſely equalled the quantity produced by infuſion), and I found that the decoction was not only as ſtrong, but, by every appearance and trial, one half ſtronger than the infuſion. So that the infuſum roſæ extracts one part, while the decoctum extracts two parts and an half.

And, if you add to this the additional proportion of roſe leaves in our decoctum, which is, as 48 to 180 of the Pharmacopœia*, this decoction will doubtleſs be conſidered as a medicine worthy of ſome attention: and, as ſuch, we beg leave to recommend it. If to half a pint of this decoction you add ſix drachms of the mel roſæ, and a proportion of mineral or vegetable acid adapted to the ſtate of the parts affected, you have a very effectual gargle for ulcerated ſore throats; and one much preferable to any which can be prepared from the infuſion or tincture.

What we have now ſaid of the red roſe is applicable to many other ſimples of the materia medica. As, for example, the decoctions of wormwood, and chamomile flowers, are, on the ſame principles, much more powerful ſtomachics than their infuſions; as their ſtomachic properties reſide in their fixed parts alone. The following decoction of chamomile I have found of great uſe in ſome affections of the ſtomach, after many other medicines had failed.

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* Vide page 25.

Decoctum Florum Chamæmeli *.

℞. Florum Chamæmeli unciam unam,
Aquæ puræ, vel diſtillatæ, libram unam; coque ad libram dimidiam, et ab igne remotis adde
Pulveris craſſi Radicis Zingiberi Albi drachmas duas: fiat infuſio donec frigeſcat; deinde valide exprimens cola. Liquoris colati ſumat æger cyathum vinoſum, bis vel ter quotidie.

The *Sarſaparilla* † is another article of the materia medica, whoſe fixed parts contain all its medicinal properties; and which, therefore, can only be extracted by decoction.

It ſeems ſurpriſing that Dr. Cullen, although he allows that certain acrimony may exiſt in the blood and become the cauſe of diſeaſe, ſhould, notwithſtanding, contend that the ſarſaparilla, which evidently contains a bland, inſipid, mucilaginous property, which may be taken into the blood veſſels and ſheath this acrimony, is good for nothing.

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* Anthemis Nobilis Linnæi.

† Smilax Sarſaparilla Linnæi.

But, from its ſenſible properties, and from my own experience of its effects, I am convinced that the ſarſaparilla poſſeſſes ſome bland, mucilaginous and ſheathing properties, which, when properly extracted by decoction, may prove aſſiſting in the cure of many obſtinate diſeaſes. That common or ammoniacal ſalt, may exiſt in the blood, in an increaſed quantity, as well as many other ſtimulating ſubſtances, ſuch as ſublimate mercury, &c. and thus give riſe to many morbid affections, every one acquainted with the nature of theſe ſubſtances and of the animal œconomy muſt allow. And, that the decoction of ſarſaparilla is a ſubſtance well adapted for being abſorbed and carried into the blood veſſels, and there ſheathing every kind of acrimony or ſtimulating ſubſtance it may meet with, cannot be denied.

Many diaphoretic properties have been aſcribed to the ſarſaparilla: but this idea appears to have chiefly ariſen from the mode of its adminiſtration. For, as the ſarſaparilla has been more commonly given in the form of decoction, and that weak, and in conſiderable quantities; it may not be improbable to imagine that the diaphoretic effects generally ſucceeding its exhibition proceeded more from the warm water in the decoction, than from any particular diaphoretic property naturally exiſting in the ſarſaparilla.

Dr. Cullen* places the Sarſaparilla in his chapter on Stimulantia: but, would it not have been more natural to have placed it among the Demulcentia?

The London and Edinburgh colleges, attentive to the proper mode of extracting its virtues, have given very proper directions for obtaining them. I have, however, met with patients who could not take it in the form preſcribed in ſufficient quantity to produce any very beneficial effects, without having the ſtomach and whole conſtitution very much relaxed by the large draughts neceſſary to be taken. To obviate this inconvenience I have, for ſome time paſt, generally boiled the quantity of decoction which commonly made a quart down to a pint; of which the patient took a quarter of a pint, inſtead of half a pint, twice or three times a day. And, as it frequently happens that, together with the ſarſaparilla, ſome tonic or ſtrengthening medicine is alſo indicated, I have, on theſe occaſions, commonly added ſome of the Peruvian bark, and prepared my decoction in the following manner; by which the virtues of the ſarſaparilla appear to be wholly extracted, while a watery vapour only is loſt by the long boiling.

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* Vide Mat. Med.

Decoctum Sarſaparillæ cum Cortice Peruviano.

℞. Radicis ſarſaparillæ inciſæ uncias tres,
Liquoritiæ inciſæ drachmas duas,
Pulveris Craſſi Corticis Peruviani unciam dimidiam,
Aquæ puræ libras quatuor: decoque ad libram unam, et cola.
Bibat æger liquoris colati uncias quatuor bis vel ter die.

During this demulcent and gently tonic plan, the patient's appetite and general health commonly mend; while all the ſecretions are performed regularly, and in proper quantity. I have ſeen this medicine, which, in general, rather ſtrengthens than weakens the ſtomach, have very good effects in the leproſy, and other cutaneous affections. Was this from the decoction entering the blood veſſels, and there ſheathing acrimony ſo as to allow it to paſs off by the different excretories; or were the good effects entirely produced by the action of this medicine upon the muſcular fibres of the ſtomach? I am inclined to believe, from both.

CHAP. II.

On the Cicuta, Stramonium, Hyoſciamus and Aconitum; with ſome Remarks on Sedatives in general.

THE *Cicuta**, or *Hemlock.* Having for many years paſt entertained an idea that the good effects produced by the cicuta, in the cure of the different diſeaſes for which it was adminiſtered, depended chiefly upon its ſedative powers: and finding that the ſame is confirmed, not only by my own practice, but even by that of the celebrated Dr. Storck and others, I think it a duty incumbent on me to ſubmit the reſult of my reflections and obſervations to public examination. And if, in ſo doing, I ſhall be found to have aſſiſted in eſtabliſhing a fixed principle, by which practitioners may be directed in the exhibition of this remedy, I ſhall feel much ſatisfaction.

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* Conium Maculatum Linnæi.

That the cicuta poſſeſſes *direct ſedative properties*, and by them alone has cured, or aſſiſted in the cure of, the various diſeaſes for which it has been given, will, I think, appear evident from almoſt all the caſes publiſhed on the ſubject, where the particular effects are properly related. And although the learned Dr. Storck, of Vienna, to whom the world is much indebted for the pains he beſtowed in the inveſtigation of this medicine, ſeems, in ſome parts of his caſes, inclined to impute the good effects of the cicuta to ſome property of purifying the blood; yet, upon the whole, he ſeems to conſider its action as inſenſible. That is to ſay, he could not account for it upon any fixed or viſible principle. Therefore, when ſumming up the reſult of his experiments, he obſerves, " Agit *modo inſenſibili*, nec *alvum*, nec *vomitum*, nec *urinam*, nec *ſudorem* movet*." And notwithſtanding, in the 3d Corollary to his ſupplimentum neceſſarium, he allows that ſome evacuations may take place by the ſkin and kidnies during its uſe, yet he there adds, " In plurimis tamen ægris *nullam excretionem ſenſibiliter* auget." The juſtly-admired and venerable Cullen ſays, " I am ſtill at a loſs to ſay what are truly the powers and virtues of this plant;" although he allows it capable of producing very conſiderable effects on the human conſtitution*. It appears to me wonderful that theſe two eminent phyſicians ſhould not have been able to diſcriminate upon what principle it acted; although its direct ſedative effects are particularly viſible through the greateſt number of Dr. Storck's caſes, in his firſt, ſecond and third publications, as I ſhall now endeavour to demonſtrate. But ſhall firſt beg leave to ſtate what is generally meant by a ſedative. Dr. Cullen, in his chapter on *Sedantia*, ſays, "Theſe are the medicines which directly, and without evacuation, diminiſh the motion and powers of the human ſyſtem."

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* Vide Antonii Storck libellum primum de cicuta.

By this definition of ſedatives the Dr. ſeems only to conſider, as ſuch, thoſe ſedative medicines which promote no particular evacuation. But may not evacuations of different kinds be by them produced merely from their operation as ſedatives? I conceive there may: as, for example, by the ſkin, from relaxing a ſpaſmodic conſtriction of the extreme veſſels; or by the kidnies, from taking off conſtriction alſo of their ſecretory veſſels. And in this way the cicuta may, every now and then, occaſion a flow of thick urine, or a general perſpiration; according to the particular ſtate of the cuticular or renal veſſels.

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* Treatiſe of the Mat. Med. Vol. II.

Notwithſtanding, the cicuta more generally correſponds with Dr. Cullen's deſcription; as will appear from the above quotations from the writings of Dr. Storck, as alſo from the writings of every other author on the ſame ſubject.

Now it is well known to practitioners, that, ſince the ſtimulating powers of opium and other ſubſtances, generally accounted ſedative, but which only prove ſo indirectly, or after they have firſt produced ſome ſtimulating effects, have been particularly attended to, it has been a *deſideratum* to find out a medicine which would immediately produce ſedative effects, without occaſioning any ſtimulating operation. And, indeed, ſome practitioners have contended that no ſuch direct ſedative exiſted in nature. But that the cicuta is one, I truſt the reader will ſoon be convinced by the following remarks.

Proofs of the direct ſedative Powers of the Cicuta, from Dr. Storck's Libellus Primus de Cicuta.

In Caſe 4th, an account is given of a virgin, eighteen years of age, where, after ſevere affection of one breaſt, the diſeaſe at laſt terminates in an open cancer. The Dr. begins his treatment thus: "Hinc externe fomentum ex foliis cicutæ adplicui, et interne dedi mane & veſperi tres pilulas, quarum quælibet grana duo pondere habuit;" and immediately obſerves, "*Eodem adhuc die* his remediis dolores multum imminuebantur." Caſe 15th exhibits a dreadful caſe of cancer of the ſcrotum, and of fungous excreſcencies on the penis, alſo become cancerous, which originated from a venereal cauſe, and where that diſeaſe ſtill exiſted, nothing having been taken to counteract or remove it. After deſcribing the miſerable ſtate of the patient, that "nec quiete jacere, nec præ dolore dormire, minus autem ambulare potuit," he ſays, "In principio ſtatim ter de die ſex pilulas (a gr. ij) præbui, & partes affectas fomento diligentiſſime feci ſoveri. *Eadem veſpera* remiſerunt dolores, & miſer ſponte cepit dormire." Are not direct ſedative powers evidently demonſtrated by the two foregoing quotations? In the laſt both cancerous and venereal irritation are immediately counteracted by this medicine.

Caſe 16th, is a remarkable one of many fiſtulous ſinuſes, where the patient, exhauſted with pain and a long continuance of the diſeaſe, and after the adminiſtration of many remedies without effect, was at laſt cured by the cicuta internally and externally adminiſtered. The Dr. obſerves, "*Primo ſtatim die* dolores mitigabantur, & ægra ſine opio dormivit, quod ante nunquam factum erat." Were not the morbid actions from this moment diminiſhed by the ſedative effects of the cicuta, and the patient gradually reſtored by a return of healthy ones?

Other Proofs from Dr. Storck's Libellus Secundus de Cicuta.

By Caſe 2d, are clearly demonſtrated the ſedative powers of the cicuta, producing direct debility by continued application. In it the learned Baron gives an account of a great diſeaſe of the breaſt, in a woman, thirty-ſix years of age, which is at firſt large, hard, and painful; and then becomes open, diſcharging ichorous matter from an ill-conditioned and troubleſome ulceration. A cure is at laſt accompliſhed, chiefly by the cicuta and the Peruvian bark. Now, if the reader will particularly attend to the effects of theſe medicines on the patient, during the treatment, he will perceive them always ſedative or tonic according to the mode of their adminiſtration. For when the cicuta is continued by itſelf for any length of time, or when the doſe is much increaſed, even when accompanied with a little bark, ſedative and debilitating effects ſoon become apparent. In ſhort, the whole hiſtory exhibits a ſucceſſion of ſedative effects producing debility, ſhivering, &c. which are always removed by the increaſed adminiſtration of the bark, and the diminution or omiſſion of the cicuta. In one part of this caſe, after having continued the cicuta alone for twenty-eight days, in conſiderable doſes, he ſays, "Verum ægræ vires proſternebantur, & nova iterum ſebricula orta eſt, et ſæpius advertebantur horripilationes:" and adds, "Hinc dedi iterum corticis Peruviani nuciam dimidiam per diem." And he diminiſhed the quantity of the cicuta from a drachm and an half to a ſcruple in the day. It will be alſo obſervable, that, when the ſedative power of the cicuta is applied ſo long as to produce debility, then the diſcharge becomes more ichorous, and every thing aſſumes a more unfavourable aſpect; until, by withdrawing the different cauſes of debility and giving ſome tonic medicines, the ſtrength is again reſtored.

Caſe 3d. Here a man, twenty-ſeven years of age, afflicted with a large, foul, ſpreading cancerous ulcer of the ſide, which had, for a long time, reſiſted many different modes of treatment, and even the bark itſelf, although given in large doſes and for a conſiderable time, was at laſt cured by the inward and outward application of the cicuta.

In this caſe the ſedative effects of the medicine ſoon became apparent, by diminiſhing the hectic fever of irritation, and thus procuring quiet ſleep and a diminution of all the other unfavourable appearances of the diſeaſe. Now, as it may ſometimes happen that, in order to cure ulceration, nothing is wanting but to diminiſh the irritable action of the abſorbing veſſels; it cannot, therefore, appear improbable that the cicuta, by its ſedative powers, ſhould accompliſh this deſirable purpoſe, and thus allow a cure to take place without the aſſiſtance of the bark. This ſedative power is even evident by the external application alone; for by only bathing an irritable cancerous ſore with an infuſion of the cicuta the irritability is immediately diminiſhed, and the thin fœtid ichor is gradually changed into a diſcharge of a more favourable kind.

Caſe 7th produces an example of the ſedative powers of the cicuta when thrown even into the cavity of the cheſt. It was in the dreadful caſe of a virgin, of twenty-one years of age, where, from a ſevere and tedious cancerous affection, the ribs were become carious, and an opening made into the cavity of the cheſt, through which fœtid ichor was diſcharged. A variety of injections were thrown into the cavity of the thorax in order to cleanſe it, many of which the patient could not bear: that of barley water and honey was the eaſieſt, but the fœtid ichor ſtill continued to be diſcharged, attended with heat and pain. An injection of the infuſion of cicuta was therefore adopted: upon which the matter became almoſt immediately leſs fœtid, and the heat and pain in ſome degree decreaſed. His words are, " Altero die jam materies ex " cavo pectoris prodiens non amplius adeo fæ- " tuit, et dolor, ardorque paulisper imminuti " ſunt."

" ſunt." And a little farther he adds, " Lene " ab initio fiebat infuſum cicutæ pro injectione, " quoniam autem vidimus id nec pulmones irri- " tare, nec augere anxietates, & bonum præſtare " effectum, id ſaturatum dein adhibuimus." Under the ſame title of caſus 7mus. is related an account of a man, affected with empyema, where the operation was performed, the matter was diſcharged, and the ribs found carious. Here, after mentioning that the ſurgeon had tried many injections, he adds, " Nullam autem magis uti- " lem invenit, quam eam, quæ infuſo cicutæ facta " fuit, hæc enim pus laudabile fecit." And a little farther, " Mirum! quod ſaturatum infu- " ſum cicutæ in cavum pectoris, et ad nudum " pulmonem injectum nullas turbas, nullas anx- " ietates, &c. excitaverit."

Now had a ſolution of opium been injected, much pain would have been at firſt produced, as is the caſe when applied to the eye or to any tender ſurface.

In this ſecond publication of Dr. Storck there are many of his medical correſpondents who confirm his good opinion of the cicuta. One of them, Mr. Ferdinand Leber, writes thus, " Fœmina, 34 annorum, poſt terrorem habuit " mammam induratam, dolentem, moles duritiei

" ſemper

" ſemper increvit, & aucti ſunt dolores. Data " cicuta mox melius ſe habuit, & intra binos & " dimidium menſes fuit penitus ſanata''—which I truſt will be allowed as another inſtance of the ſedative powers of the cicuta. Here the irritability of the part was ſo much increaſed that it was about to break out into an open cancer, but was happily prevented by the ſedative powers juſt mentioned. In the firſt corollary of this book Dr. Storck, when ſpeaking of the effects of the cicuta upon the blood, obſerves that the blood of many people, who had taken this plant in large doſes and for a long time, was of proper colour and conſiſtence: and ſays that he and Dr. Reſtler found the blood of a lady, in the laſt ſtage of pregnancy, and who had taken cicuta during ſeveral months of her time, reſembling that of perſons in good health. Here he does not even mention that the buff coat (commonly ſo called), which is generally ſeen in the latter months of pregnancy, appeared on this occaſion. In the ſame corollary the Doctor adds another fact, which is of great importance towards eſtabliſhing the direct ſedative principle I have been endeavouring to demonſtrate. His words are, " Dum hæc ſcribo, " ſanguinem, iterum miſi alii comiti, quæ cicuta

" a binis menſibus utitur, & video eundem optime ligatum, & longe ſaniorem, quam fuit ante uſum cicutæ, tunc enim ſemper ſanguis erat tenaci, mucoſa, & *variegata cruſta tectus*, fibroſus." Doth it not appear evident from this quotation that the cicuta, inſtead of increaſing the action of the heart and arteries, and thus alſo the phlogiſtic diatheſis of the ſyſtem, rather tends to diminiſh both? It certainly does: and I have often uſed it for this purpoſe in the acute rheumatiſm, and with the greateſt ſucceſs *.

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* The ſalutary effects of the cicuta in the very laſt ſtage of pregnancy is alſo confirmed by Dr. Butter, to whom the publick is much obliged for the trouble he has taken in recommending this remedy in the kinkcough; the efficacy of which in that diſeaſe I have often experienced. The Doctor's judicious rules for making its different preparations are well worthy of being peruſed by all who wiſh to have them in perfection, particularly the extract †. In making the latter preparation I particularly adhere to the Doctor's directions; only that, as I imagine that much of the ſedative effects of the cicuta depend upon its volatile parts, I, therefore, endeavour, as much as poſſible, to preſerve them: and, for this purpoſe, while the evaporation and coagulation are going on, I carefully collect the coagulated portions, or clots, into a pot until the end of the proceſs; when I mix the whole together, and reduce them to the conſiſtence of an extract. And if I wiſh to make the extract according to the Edinburgh Pharmacopœia,

† Vide a Treatiſe on the Kinkcough.

copœia,

So far do the two firſt publications of Dr. Storck ſeem to confirm the idea of the direct ſedative powers of the cicuta. I ſhall beg leave to mention another proof from his Supplimentum Neceſſarium, or 3d publication, de cicuta.

In caſe 9th of this ſupplement is related an account of a cancer of the noſe and upper lip, with which the patient was affected for two years. The parts were livid, hard, ſwelled, and ſo painful that no ſleep could be procured. After having uſed purgatives, antiſcorbutics, mercurials and purifiers of the blood, from which the diſeaſe ſeemed rather to increaſe, he begins the uſe of the cicuta; and with the happieſt effects. His words are, " Adhibita cicuta ichor copioſiſ-
" ſimus, ſed longe blandior, effluxit, mox partes
" omnes detumuerunt, dolor evanuit, lividus
" color mutatus eſt in naturalem."

Further proofs of the powers of the cicuta from Dr. Andree †, with ſome other remarks on the different ſedatives.

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copœia, which I have always found to be the moſt effectual, I mix the powder at the ſame time; which renders leſs evaporation neceſſary.

† Vide Obſervations upon a treatiſe on the virtues of Hemlock, &c. by John Andree, M. D.

Having above endeavoured to point out the ſedative property of the cicuta from the writings of Dr. Storck, I ſhall now proceed to give ſome extracts from his opponent, Dr. Andree, in further confirmation of this idea. Dr. Andree, in his obſervations upon Dr. Storck's treatiſe, labours to refute the Doctor's ideas reſpecting the innocence of this remedy, and very properly cautions againſt truſting entirely to it in the cure of cancer, and the other diſeaſes in which Dr. Storck recommends it. But, leaving their diſpute to themſelves, I ſhall only adduce a few of the facts which tend to eſtabliſh the ſedative powers of the cicuta.

Dr. Andree, page 6th, mentions the caſe of Elizabeth Web, where, after taking "ſix grains "of the extract night and morning, for two or "three days, ſhe was obliged to leave it off; "for it brought on ſuch dizzineſs of the head, "and dimneſs of the eyes, that ſhe thought ſhe "ſhould loſe her ſight. Her ſpeech was alſo "affected, and ſhe felt a numbneſs in her limbs, "eſpecially the arms and hands; ſo that ſhe "was afraid ſhe ſhould loſe the uſe of them." Are not theſe the effects of a direct ſedative power applied ſo as to bring on direct debility? I believe ſo: and think that, if it had been given in a ſmaller doſe, theſe ſymptoms of debility would not have appeared.

At page 8th is given the caſe of a Lady, of a bad habit of body, who alſo took the cicuta for a cancer. She took two pills every day. "After "the ſecond doſe," ſays he, "ſhe was taken "with a dizzineſs in the head, and ſickneſs. On "taking the fourth doſe, ſhe became paralytic "all over, loſt her ſpeech, and for ſeveral days "ſeemed to be dying. By the aſſiſtance of car-"diac, &c. medicines, ſhe recovered from this "dangerous ſituation." This is ſtill a more ſtriking caſe of debility induced by the application of a ſedative power, and which is removed by the uſe of cordial medicines. Several other caſes of the ſame kind are related by Dr. Andree: who, afterwards, obſerves, reſpecting the action of the cicuta, that "It ſeems principally "to attack the primæ viæ, and debilitate the "nervous ſyſtem."

Upon the whole, it appears that he conſiders it as either dangerous or uſeleſs.

But as the virtues of all the articles of the materia medica are only relative, and as they become either poiſonous, medicinal, or good for nothing, according to the mode of exhibition; ſo alſo may the cicuta be given ſo as to be either ſalutary, poiſonous or of none effect. For by the ſame ſedative property by which it allays irritation and pain, and is capable of ſuſpending the different morbid actions, may it alſo ſuſpend all the actions of the body, and even that of the heart itſelf. This effect of the cicuta has not been denied by the modern phyſicians; and is particularly acknowledged by the ancients, who were therefore very fearful of uſing it as a medicine.

Indeed, in greatly debilitated conſtitutions, ſome caution is neceſſary in proportioning the doſe to the ſtrength of the patient's conſtitution. For I once ſaw an unfortunate caſe, which intimated to me this kind of circumſpection. It was in that of a patient who had been long afflicted with chronic rheumatiſm, by which ſhe was conſiderably weakened; where, from taking ſome pills of the extractum cicutæ, in a quantity beyond that ordered by the gentleman who attended her, and, I preſume, in a quantity beyond the ſtrength of her vital powers, all the actions of the body were gradually diminiſhed, and at laſt entirely ſuſpended; and the patient thus delivered, quietly and without a groan, into the arms of death. Nor, in this caſe, would it have been any good objection to the ſedative power of the cicuta, if the vis medicatrix naturæ ſhould have been rouſed, and, in its laſt ſtruggles for the defence of the conſtitution, produced ſome convulſive efforts.

Now we have above ſeen, that the cicuta, when given in a moderate doſe, or in one properly adapted to the ſtrength of the patient and nature of his diſeaſe, produces the moſt beneficial ſedative effects: as alſo, that, when carried a little farther, debility enſues; and that, in a ſtill increaſed proportion, life at laſt may be in danger. But that the cicuta is perfectly innocent in proper hands, is very well aſcertained; and, that its effects ariſe chiefly or entirely from its ſedative powers, I truſt, have now been ſufficiently demonſtrated. When, therefore, a fever of irritation exiſts, whether it ariſes from a tubercle about to inflame and ſuppurate, from a ſcirrhous tumour about to break open or form a cancerous or other irritable ulcer, or even when cancer is formed; by its ſedative powers it allays the irritation, quiets pain, and diminiſhes the frequency of the pulſe; and thus allows the healthy operations, when properly directed towards the removal of the diſeaſe, to proceed without interruption. In caſes where ſeveral pieces of carious bone were to be removed, the cicuta has been, in the ſame way, found of ſervice; and, by diminiſhing the irritability of the neighbouring parts, it has allowed them to come away without much pain or irritation. Seeing, therefore, that direct ſedative powers exiſt, and are the only demonſtrable properties, in the cicuta, we ought not to wonder if, after having allayed all the ſymptoms of irritation, the ſedative powers can extend no farther for the benefit of the patient*. And, as the taking off of irritation is not always the only treatment neceſſary for the cure of ſcirrhus or cancer, ſo the practitioner, who, in thoſe caſes, truſts entirely to the cicuta, will be often diſappointed. Indeed we ſee that Dr. Storck, and alſo his correſpondents, every now and then, uſed other remedies together with the cicuta; for example, in caſe 18th of his Libellus 2dus, he ordered a purgative of rhubarb and ſal polychreſt to be taken every fortnight, together with the cicuta; and the patient recovered perfectly. And the learned Dr. Kaiſin, in a Letter to Dr. Storck, ſays, "Etenim fere omni ſeptimana dabam meis ægris "purgans, & eis conducebat." Might not theſe purgatives, or ſome invigorating or different air, or ſome other application to the ſyſtem, ſuch as good news, love, an extraordinary glaſs, &c. bring about new and healthy actions in the parts affected, while the morbid actions or diſpoſitions to inflammation were either leſſened or ſuſpended by the cicuta?

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* ———— ſunt certi denique fines,
Quos ultra citraque nequit conſiſtere rectum.
Hor. Sat. 1. lib. i.

In conſidering ſedatives according to their effects, may they not be naturally divided into two kinds, viz. *Direct and Indirect ?*

By a *Direct Sedative,* I mean a medicine which operates more or leſs immediately as a ſedative, without producing any ſtimulating effects; ſuch as the cicuta, hydrogen air, and perhaps many other ſubſtances.

By an *Indirect Sedative,* I mean a medicine which, although it ultimately produces ſedative effects, yet has ſome other previous ſtimulating operation; ſuch as opium, paregoric elixir, &c.

Now, although opium has generally been ranked as the chief of the ſedantia, yet its ſtimulating power is at preſent very well aſcertained: and every practitioner knows (what we have already mentioned), that, if applied to the eye, or to a tender ſurface, it will produce more or leſs of irritation and pain, whatever ultimate ſedative effects it may occaſion. From this ſtimulating property, which is always more or leſs diſcoverable on its firſt exhibition, are we prevented from employing it in caſes of ſtrong active inflammation? for, in them, if opium is given alone, the phlogiſtic diatheſis of the ſyſtem is in general thereby increaſed, and the diſeaſe thus rendered more difficult of cure. But it is not ſo with the direct ſedative we have been treating of: for in the moſt acute rheumatiſm, or in the moſt violent pleuriſy, it may be given with advantage; and, inſtead of increaſing, it will rather help to diminiſh, the phlogiſtic diatheſis *. Nor will the cicuta, if applied to the moſt irritable ſurface, or (as we have ſeen above) if even thrown into the cavity of the cheſt itſelf, produce pain or irritation: on the contrary, it will immediately relieve both, and in ſo doing will clearly demonſtrate its direct ſedative powers. Although this fact is ſo clearly proved by the writings of Dr. Storck, and others, as to be beyond the poſſibility of doubt, it ſeems ſtrange that no practitioner has yet pointed it out ſo as to be kept in view in general practice.

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* Cicuta nec *majorem motum,* nec in ſanguinis circulo *turbam* excitat.

Supplim. neceſſ. de cicuta, corol. 2dum.

The reader has already ſeen the candid acknowledgement of Dr. Cullen: and he muſt alſo know, that no particular principle has yet been ſettled among practitioners reſpecting its adminiſtration. For, while one condemns it as either dangerous or uſeleſs; another gives it in all caſes, whatever they may be, or in whatever ſtate they may exiſt, provided they happen in a ſcrophulous conſtitution. And even the celebrated Baron Storck, notwithſtanding his great ſucceſs in the treatment of many ſcrophulous, cancerous, and other complaints, by this remedy, was ſtill at a loſs to account for its mode of operation; and had, therefore, no particular principle to direct him *.

From what hath been ſaid, may we not give the following definition of the medicinal properties of the cicuta?

The *cicuta* † is an innocent, but powerful, remedy;

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* Being of opinion that the foregoing reaſoning, on the facts related by Dr. Storck and Dr. Andree, ſufficiently eſtabliſhes the direct ſedative property of the cicuta, I ſhall, for the preſent, omit ſome particular facts of my own, as being unneceſſary, and as they are in general connected with other ſubjects which are intended for publication.

† It may be neceſſary to inform the reader that the preparations, from this herb, without the root, are thoſe meant in

medy; poſſeſſing ſedative properties, by which it is capable of diminiſhing the morbid irritability of the body, from whatever cauſe it may ariſe, without producing any ſtimulating operation: from which, therefore, it may either leſſen, or entirely ſuſpend, all diſeaſed actions which ariſe from, or depend upon, morbid irritability.

A few Obſervations on Dr. Storck's Treatiſe on the Stramonium, Hyoſciamus, and Aconitum[*].

I have already made mention of three publications, by Dr. Storck, on the cicuta: ſoon after theſe he publiſhed another on the ſtramonium, hyoſciamus, and aconitum; which ſeem to poſſeſs ſedative properties, more or leſs reſembling thoſe of the cicuta.

Of each of theſe the Doctor makes ſeveral trials, chiefly to prove that theſe ſimples, which had hitherto been accounted highly poiſonous, might be given with ſafety in the cure of diſeaſe. After a variety of experiments on himſelf and others, he proceeds to exhibit them in every obſtinate diſeaſe, or where no other remedy proved

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in this definition, viz. the infuſion, decoction, extract, and powder.

[*] Vide Libellum de Stramonio, Hyoſciamo et Aconito.

of ſervice; and often with ſucceſs, although he had no fixed principle to guide him.

*Stramonium**, or *Thorn-apple.* After mentioning that authors had generally ſpoken of this plant as highly hurtful to man and brutes, viz. " ſtramonium turbare mentem, adferre inſaniam, delere ideas et memoriam, producere " convulſiones;" he prepares an extract from it, and with it he cautiouſly tries ſome experiments reſpecting its effects on the human body. He put upon his tongue a grain and an half of the extract, from which he found no particular inconvenience or affection; and, having diſſolved it in the mouth, he only perceived a diſagreeable, nauſeous taſte; but does not mention any ſtimulating effects, ſuch as redneſs, inflammation or pain. He ſwallowed it without obſerving any particular effect. Therefore he, afterwards, ventures to give it in ſeveral caſes of mania and epilepſy; in ſome of which it ſeemed to produce good effects. But, as the caſes are related, no decided opinion can be formed whether or not this plant poſſeſſes direct ſedative powers, ſimilar to the cicuta, although the Doctor's experiment upon himſelf ſeems to ſay ſo. It may therefore deſerve farther trial.

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* Datura, Linn. Sp. Plant.

*Hyoſcyamus**, or *Henbane.* Having prepared an extract of the leaves and ſtalks of this plant, he tries it firſt on a dog and then on himſelf; and being, thereby, convinced that a moderate doſe might be given with ſafety, he goes on to try it on his patients.

Experiment 1ſt. A woman, thirty-ſeven years of age, had been afflicted with dreadful convulſions, for above a year and an half, every day. Many medicines had been given without effect: and ſhe only received a temporary relief from opium, given in large doſes. She was at laſt cured by the extractum hyoſciami, which was firſt given in the quantity of a grain, three times a day, and gradually increaſed to nine grains a day. The convulſions ſoon diſappeared: and the body was kept open by the medicine.

Experiment 2d. A convulſive tremor of the foot was cured by this remedy, in three weeks. The patient had copious ſtools.

Experiment 5th. A man, about thirty years of age, affected with mania, having tried blood-letting, purging and other medicines without effect, took alſo paregorics and opiates, in large doſes; but, inſtead of procuring ſleep, he ſays, "noctes inde magis inquietæ reddebantur, mens fiebat anxia, oriebaturque febris." He therefore tried the extract of the hyoſciamus, in the doſe of one grain three times a day, and adds, "nox prima jam magis tranquilla fuit." And by increaſing the doſe, the rigors, delirium, &c. entirely left him, and the body became more open.

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* Hyoſcyamus niger, Linnæi Syſt. Veg.

Experiment 6th. A man, thirty-three years of age, afflicted with a ſevere tickling cough, and expectoration a little ſtreaked with blood, together with anxious nights, and having tried many things in vain, took one grain of the extractum hyoſciami in the morning, and one in the evening. The Dr. obſerves, "Nox fuit longe tranquillior, & æger ſibi opium datum eſſe, putavit." The doſe was gradually increaſed to nine grains a day, viz. three in the morning, at noon, and in the evening: and all the morbid affections gradually diſappeared. He had generally three or four ſtools a day.

Experiment 9th. A woman, thirty years of age, from having been accuſed of theft, became diſturbed in her mind, and ſo violent as to be obliged to be bound with cords. From the

11th to the 18th of September every thing which the art of phyſic could ſuggeſt was tried without any advantage: and two grains of opium having been given, they only procured her a ſhort ſleep, from which ſhe awoke worſe than ever. The extractum hyoſciami was then given; of which ſhe took two pills every day for three days, and afterwards three; and left the hoſpital, about the end of October, perfectly reſtored. The only effects, mentioned to have been produced by the hyoſciamus, were evidently ſedative, viz. "ægra pacatior fieri videbatur," and "his (pilulis) ſenſim redivit quies menti."

Caſe 10th. A woman, eighteen years of age, is cured of the epilepſy by the hyoſciamus. The greateſt doſe was two pills (each a grain) three times a day. Here purgatives were occaſionally thrown in, as ſhe was coſtive.

Caſes 11th and 12th. Are caſes of fits, cured by this remedy.

Upon the whole, it appears ſedative with the power of keeping the body open.

Aconitum[*], or *Wolfsbane.*

Dr. Storck having powdered the leaves and ſtalks of this plant, which had been reckoned amongſt the ſtrongeſt poiſons, he put a little of the powder upon his tongue, and immediately felt a heat, which continued for ſome time; together with ſome momentary, vague and lancenating pains, which often pervaded the tongue, but produced no unpleaſant conſequence: and the powder, being left on the tongue for two minutes, neither brought on inflammation nor redneſs. As long as the heat remained in the tongue, ſo long he had a copious flow of ſaliva; but in other reſpects he perceived no kind of inconvenience. Doth not the abſence of redneſs and inflammation demonſtrate the abſence of ſtimulus; and therefore prove, that the aconitum has no ſtimulating properties? And may not the heat, momentary pains, &c. be referred to ſenſation, which may not neceſſarily imply increaſed action or ſtimulating effects? The above powder the Dr. alſo ſprinkled upon a cancerous, fungous ſore: and he obſerves,

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[*] Aconitum Napellus, Linn. S. Veg.

" Primo die levis oriebatur ſuppuratio, et æger nullum *dolorem*, nec *ardorem* conqueſtus eſt, ſecundo, 3tio. quarto & 5to. die idem obſervatum fuit." Is not this a farther proof of direct ſedative powers? Having prepared an extract in the uſual manner, and put ſome upon the tongue, it only cauſed a very ſlight titillation. And having put a grain within the lower eye-lid, he obſerved no particular burning heat, but only the uſual effects as from any other heterogeneous body*. He then proceeds cautiouſly to adminiſter it inwardly; firſt to himſelf, and then to others. The firſt effect he obſerved was, that " extrema totumque corpus præter conſuetudinem toto die multum tranſpirare, madere;" which was conſtantly the caſe while he took the medicine: but, intermitting it for one day, theſe effects by the ſkin diſappeared, although they returned immediately on returning to the aconitum. Whether the action of the ſanguiferous ſyſtem was thereby increaſed, we are not informed; although, from the experiment on himſelf, we may conclude it was not, as he ſays, " Nulla inde actio corporis turbabatur."

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* " Nec inde afficiebar aliter ac a quocunque corpore heterogeneo."

After theſe experiments on himſelf, and many upon others, he concludes, that the extract of aconitum is an innocent and very efficacious medicine. And adds, " Acre, quod circa articulos, tendines, & oſſa hæret, irritat nervos, excitatque ſummos dolores, ſolvitur inde & agitur in motum, & per urinam, vel alvi fluxum, vel per ſudorem, vel per inſenſibilem tranſpirationem ex corpore ejicitur." And, a little farther, he obſerves that ſometimes the aconitum cures when the cicuta either diſagrees or fails. Notwithſtanding, he immediately acknowledges that the cicuta often relieves and cures after the aconitum has failed. " Hinc," he ſays, " de cicuta ſemper verum manet: eſſe eam medicamentum ſumme efficax in morbis curatu difficillimis."

Now, having clearly pointed out that the ſtramonium, the hyoſciamus and aconitum, poſſeſs certain ſedative powers, reſembling thoſe of the cicuta; I leave for the determination of the learned phyſician, whether the evacuations above-mentioned, whether the purgative effect of the hyoſciamus, or the ſudorific of the aconitum,

nitum, are to be aſcribed to ſedative or ſtimulating powers. But, that neither the ſtramonium, the hyoſciamus, nor the aconitum poſſeſs the ſtimulating properties of opium, is evidently demonſtrated as above.

THE END.

INDEX.

INDEX.

A. Page

ABSORBING Veſſels, their two different actions, 127
———— —————, their irritable action, perhaps the cauſe of ulceration, — — ibid. and 197
———— —————, conjectures and queries reſpecting, ibid.
Aconitum, its properties conſidered, — 216
Aërial Syſtem has no communication with the connecting cellular membrane, - — — 4
Air Atmoſpheric, its component parts, — — 158
— Hydrogen, or Inflammable, its uſe, — — 161
————, is a direct ſedative, — — ibid.
— Oxygen, or pure, is highly ſtimulating, — 160
————, irritates the ulcerated internal ſurface of the Lungs, — — — ibid.
————, its ſtimulating power deſtroyed by combination with Hydrogen — — ibid.
————, is obtained, naturally, from vegetables, 165
———— —————, artificially, from mangancſe, nitre, &c. — — — — ibid.
Anatomy and Phyſiology of the Lungs, a general view 1
Anodynes, obſervations on, — — 135

Aretæus

Aretæus recommends an aſtringent diet in hæmorrhages, 36
———'s practice confirms the utility of moderate drinking in diſeaſes of the lungs, — — 145
Aſthma, obſervations, and practical remarks on, — 49
———, the proximate cauſe is often over-diſtention of the blood veſſels of the lungs, — — 59
———, difficulty of breathing in, more commonly from compreſſion than from conſtriction of the bronchia, *ibid.*
———, our doctrines confirmed by the practice of Sir John Floyer, — — 62, & ſeq.
——————, and by the writings of Dr. Cullen, 65
———, Caſes where the limited uſe of liquids was uſed with advantage, — — — 51
———, the cure, — — 66
———, a natural cure frequently produced, — 70
———, a ſpare uſe of liquids particularly recommended, 72
———, great analogy between it and the broken-wind in horſes, &c. — — — 82

B.

Broken-wind in Horſes, an improper name, — 77
———————, a diſeaſe analogous to the aſthma, and, like it, ſeems to ariſe from over-diſtended blood veſſels of the lungs, — 77, and 82
———————, the cure, — — 83
———————, their pulmonary blood veſſels found particularly full of blood after death, — 82

C.

Catarrh, — — — 89
———, limitation of liquids recommended, — 94

Cicuta, or Hemlock, — — 190
———, is a direct ſedative, — — 191, 207
Circulation of the blood through the lungs, — 7
Climate, the beſt for conſumptive patients, — 158
Croup, — — — — 102
———, an active inflammatory diſeaſe, — 108
———, heating antiſpaſmodics improper, — *ibid.*
Cullen, Dr. his practice in hæmoptyſis objected to, 37
————, Remarks on his definition of ſedatives, 192

D.

Decoctum Roſarum, recommended in paſſive hæmorrhage, 27
———— Sarſaparillæ cum cortice Peruviano, — 189
————————, recommended in leproſy and other cutaneous diſeaſes, — — *ibid.*

E.

Emetics, their uſe in the prevention and cure of tubercle, 129
———, different kinds, and effects, — 132
———, exhibition in ulceration conſidered, — 146
———, recommended in conſumption, — 152

F.

Flores Chamæmeli, decoction preferable to infuſion as a ſtomachic, — — — 186
——— Sulphuris, uſeful in conſumption, — 153

H.

Hæmorrhage, paſſive, — — 27
————, active pulmonary, general obſervations and Remarks, — — — 12

Hæmorrhage,

Hæmorrhage, treatment of, — — — 15
———, caſes, with remarks, — — 29
Hyoſciamus, or Henbane, ſome obſervations on, 213

I.

Ingen-Houſz, Dr. his obſervations on vegetables, reſpecting their effects in ſpoiling or purifying the air, — 165

L.

Lungs, general anatomy and phyſiology, 1 & ſeq.
———, general pathology, and preliminary obſervations, 9
———, Hæmorrhage of, general obſervations and practical remarks on, — — — 12
———, treatment of, — — 15
———, wounds of — — — 24
Liquids, the limited uſe of, recommended in active hæmorrhage of the lungs, — 20, 29, 33, and 39
———, recommended in paſſive hæmorrhage of, 28
———, ——— in the aſthma, — 51, and 72
———, particularly uſeful in the ſhort-wind of horſes, 81
———, recommended in catarrh, — 94
———, ——— in the cure of tubercle, — 133
———, ——— in the ulcerative conſumption, 144, 149
———, ——— in menorrhagia, by Dr. Rowley, 36
Aretæus's practice confirms its utility, — 145

P.

Phyſiology and anatomy of the lungs, — 1
Pulmonary Conſumption, remarks on, — 47, 84

Pulmonary Conſumption, treatment of, — 139
————, the pre-diſpoſition to, conſidered, 140
————, indications of cure, — 142
————, ſuſpended by pregnancy, 158
————, a very deplorable caſe greatly relieved by a limited uſe of liquids, — 171
————, a caſe cured by the ſame, 179

R.

Roſa Rubra, or Red Roſe, poſſeſſes conſiderable aſtringent properties, — — 183
————, decoction preferable to infuſion, for extracting them, — — 184
Rowley, Dr. recommends abſtinence from liquids in menorrhagia, — — 36

S.

Sarſaparilla, ſome obſervations on, — 187
————, poſſeſſes demulcent properties, — *ibid.*
————, decoction with Peruvian bark, good in the leproſy and other cutaneous diſeaſes, — 189
Sedatives in general, remarks on, — 136, 193, 208
————, direct and indirect, — — 208
Short-wind in horſes, — — 77
————, moderate drinking of great uſe, 81, 2, 3
Sims, Dr. James, recommends ſulphur in conſumption, 153
————, tried with good effects, 153 and 174
Strength of the patient muſt be ſupported, during the treatment of conſumption, — — 156

Succus Cicutæ ſpiſſatus, a direct ſedative, 191, 207

————————, uſeful in pulmonary complaints, 136, 180

Stramonium, or Thorn-Apple, its properties conſidered, 212

T.

Tubercle, remarks on, — — 46

————, frequently formed in aſthma, — — 74

————, deſcription of, — — 110

————, Origin and ſeat, in the air cells and not in the connecting cellular membrane — 113

————, Formation of, — — 116

————, Vaſcularity, conſidered, — 119

————, relation between it and ſcrophula, 121

————, inflammation, ſuppuration, and ulceration of, 124

————, abſorption of, — — 126

————, prevention and cure of, — 128

U.

Ulceration, may be ſometimes cured by diminiſhing the irritable action of the abſorbents, — 197

———— of the lungs, the treatment of, — 139

————————, why ſo difficult to cure, — 142

————————, the effects of oxygen and hydrogen air on, — — — 159